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"It will flourish, if naturalists, chemists, antiquaries, philologers, and men of science, in different parts of *Asia*, will commit their observations to writing, and send them to the Asiatic Society at Calcutta; it will languish, if such communications shall be long intermitted; and it will die away, if they shall entirely cease."

SIR WM. JONES.

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I.—*Extracts from the* Mohít, *that is the Ocean, a Turkish work on Navigation in the Indian Seas. Translated by the* Baron Joseph Von Hammer, *Prof. Orient. Lang. Vienna, Hon. Mem. As. Soc. &c.*

[Presented in Manuscript, and read at the Meeting of the 5th instant.]

Si'di' Al Chelebi, captain of the fleet of Sultán Suleimán, the legislator in the Red Sea, is already known in Europe and India, by the notice given of his journey overland from the Indian shores to Constantinople*, and by the titles of his works recorded in the history of the Ottoman empire†. The two principal ones are, first, the description of his above-mentioned journey, which bears the title, *Mirror of Countries*‡; the second, his work on navigation in general, and particularly in the Indian seas, which forms the subject of this notice.

My attention to the high interest of this nautical work having been first roused thirty years ago, by the article mentioning it in Háji' Calfa's Bibliographic Dictionary, I spared no kind of exertion to find a copy of it, whether in the libraries, or among the book-sellers of Constantinople: but all my researches were baffled for more than twenty years, until at length I lighted upon it in the library of the *Musèo Borbonico* at Naples, in the year 1825; and after an investigation of seven years more, I was at last fortunate enough to buy at Constantinople, the manuscript serving for this notice. It is written in the fair *Neskhi* hand, bearing the stamp of Sultán Suleimán's age, and is stated to have been copied but four years after the composition of the original, which was finished at *Ahmedabád*, the capital of Gujerát, in the last

* In the Transactions of the Bombay Literary Society; in the *Asiatic Journal*; and the *Journal Asiatique*; and printed separately.

† Tom. iv. p. 416.

‡ Miret-ul-memálik.

days of Moharrem of the year 962, (December, 1554,) while the present copy was finished in the town of *Amed* or *Diarbeker*, in the first days of *Rabi ul awal* of the year 966, (December, 1558.) The manuscript consists of 134 leaves or 238 pages, large octavo.

Sídí Alí Capudán's (Captain) work, according to the announcement in its preface, has been compiled out of no less than ten Arabic works on the Geography and Navigation of India, three ancient, and seven modern ones.

The ancient ones: 1. The work of Leis Ben Kahla'n; 2, of Mahammad Ben Shadán; 3, of Sahl Ben Aba'n. The modern: 4, the work of Jolfár Ben Ahmed Ben Ma'jed, a native of *Ommán*; then the five works of Suleima'n Ben Ahmed, a native of the town of *Sheher**, viz. 5, the *Fewaíd*†; 6, the *Hauwíe*‡; 7, the *Tohfetelfohúl*§; 8, the *Omdet*‖; 9, the *Minhúj*¶; 10, the *Kiládet ul-shomús***.

The interest of its contents may be fairly estimated from the titles of its chapters and sections.

First Chapter.—*Of the names of the skies and the stars, of the elements and what belongs to them:* 1, of the skies, stars, and elements; 2, of the division of the circles of the skies; 3, of the astronomical measures called *Essabe*††, (inches,) and of the cardinal points of the compass, (*Ahnán*)‡‡; 4, of the instruments serving to measure the distance of the stars; 5, of the making of these instruments; 6, of the calculation necessary to take the height of the stars.

Second Chapter.—*Of the* Oss§§ *(the foundation) of all astronomical calculations:* 1, of the solar and lunar years; 2, of the foundation of the calculation of solar and lunar years; 3, of the foundation of the Roman and Coptic *solar* year; 4, of the mode of finding the *lunar* year; 5, of the mode of finding the *Roman* year; 6, of the mode of finding the *Coptic* year; 7, of the mode of finding the *Persian* year.

Third Chapter.—*Of the divisions and subdivisions of the compass, rhumbs* (*Erwám* ||||) *and points* (*Tarfát*¶¶); 1, of the *rhumbs* lying between the cardinal points (*Ahnán*), 2, of the subdivisions of the rhumbs called *Tarfát:* 3, of the true circles of the compass.

Fourth Chapter.—*Of the Indian Islands above and below the wind, and of America*: 1, of the islands situated above the wind, 2, of the absolute circles; 3, of the circles situated below the wind; 4, of the circles of the islands; 5, of America.

* شحر in the country of بُرز (near Aden). † فوايد useful applications.

‡ حاوية the comprehending. § تحفة الفحول present for classic men.

‖ عمدة the column. ¶ منهاج the true road.

** قلادة الشموس the collar of suns. †† اصابع

‡‡ احنان §§ اسّ ||| اروام ¶¶ ترفات

Fifth Chapter.—*Of the calculations and the technical terms of mariners*: 1, of measurement in general, 2, of the fundamental measure; 3, of the measurement of stars which rise and set together; 4, of the names of the stars, from which are taken the names of the rhumbs and points of the compass; 5, of the circuit of the two highest stars in Ursa Minor (*Farkadain*) round the pole; 6, of the lunar stations; 7, requisites of the pilot; 8, measures of the most celebrated stars.

Sixth Chapter.—*Of the measures of the most celebrated continents*: 1, of the difference of polar measures; 2, of the measurement by the north pole; 3, of the measurement by the two highest stars in Ursa Minor (β, γ); 4, of the measurement by the four stars of Ursa Major (α, β, γ, δ.)

Seventh Chapter.—*Of distances*: 1, of the original distances; 2, of the different manners of calculation; 3, of the difference of distance for two ships sailing on two different points of the compass; 4, of the composition of charts and maps; 5, of the distances of certain places situated in the direction up to within one *Esba* (astronomical inch) from the pole; 6, of the distances of some places between them.

Eighth Chapter.—*Of the winds and monsoons*: 1, of the winds; 2, of the monsoons and their time; 3, of the monsoon called *headwind* and monsoon of the olives, (*Mausim zaitúní**); 4, of the monsoon called by some *Damání*† and its time; 5, of the monsoon called the Eastern *Sabá*‡, *Ezb*§, and *Rihi qabúl*‖.

Ninth Chapter.—*Notice of certain islands and voyages, and the signs of vicinity of land necessary to be known by pilots*: 1, of the islands of the Arabian continent; 2, of the islands of the Persian continent; 3, of the voyages along shore, and the signs of vicinity of land.

Tenth Chapter.—*Of accidents and dangers to be warded off by reason and experience, and of hurricanes* (*Tufán*): 1, of accidents and dangers to be warded off by reason and experience; 2, of the hurricanes.

The most interesting of these ten chapters are the *fourth*, on the continents and islands, above and below the wind; the *eighth*, on the monsoons; and the *ninth*, on the Indian voyages, wherein the direction and steering of thirty voyages, with all the intermediate points, which are to be touched on, or taken care of, are given in detail. As a specimen of the practical interest of this curious and useful book follows the translation of the eighth chapter, on the *monsoons*, as being one of the shortest, and not least interesting.

Chapter VIII.—Of the Winds and Monsoons.

Section 1. *Of the Winds.*

The cause of the wind is the motion of the air; don't you see that agitating a fan you do produce wind? It is also produced by cold, as may be

* موسم زيتوني † دماني ‡ صبا § ازيب ‖ ريح قبول

shown from numerous proofs. If you sail under a cloudy sky, with a strong wind, and a cloud approaches the ship from one side, so that the cold of the cloud is sensible, the first wind ceases, and with its ceasing, the cold ceases also; further, winds blowing from the land set in at night, and those blowing during the day come from the sea, and cease when night approaches; the cause of which is, that at night the earth grows cool, and the sea remains warm, the contrary of which is the case during day-time, because, by the reverberation of the rays of the sun, mountains and deserts are heated during the day. Another proof is, that the coldness of sandy deserts is stronger than that of a mountainous country, and ground watered by rain is colder than ground which is not drenched by rain. Another proof is, that a cloud, particularly when in motion, produces wind, arising from the cold which is hoarded up in the cloud. The principal winds are four, according to the Arabs, the Northern, Southern, Eastern, and Western; those between them are called *sidewinds* (Nokeba); but the pilots call them by names taken from the rising and setting of certain stars, and assign them certain limits, within which they begin or attain their greatest strength, and cease. These winds, limited by space and time, are called *Mausim* (*Monsoon*); viz. *seasons*.

The following Arabic verses give the names of the four cardinal winds:

Saba (the East) blows from the rising of the sun. From the *Polar Star*, comes the North wind, called *Shemeul*; and from *Canopus*, the South wind, called *Janúb*; opposite to the East blows the West wind, *Dobúr*.

Section 2. Of the different sorts of monsoons, and the time they blow in.

Be it known, that the ancient masters of navigation have fixed the time of the *monsoon*, that is to say, the time of voyages at sea, according the year of *Yazdajird*, and that the pilots of recent time follow their steps; but as there is in every true solar, that is to say *Jalálian*, year, near the fourth of a degree more, every four years, a day is intercalated, so that this day is deficient in the *Yazdajirdian* year. The late master Suleima'n Ben Ahmad wrote his book *Omdat* (the column) in the year of the Hijra 917 (1511), and fixed then the time of the monsoons according to that year, since which, up to that of this translation, 961 (1753), more than forty years have elapsed, so that the time fixed by him for the monsoon, falls now short by ten days. For example, the monsoon which set then in on the 120th day of the Yazdajirdian year, sets in now on the 130th, and that which was fixed then on the 160th, falls now on the 170th. The rest must be calculated in the same way, in order to avoid error and confusion; but even the intercalation of a day every fourth or fifth year is not free of error; it is, therefore, the most expedient to calculate according to the zodiacal year*, that is to say, the *Jalálian* year, which requires no intercalary days. The monsoon of each country is limited by its fixed time. Remark further, that wherever the word *fi* (about) is added, it is to be understood, that the monsoon sets in about the time stated; for example, if it is said *about* the tenth of the year, means that it does not exactly set in on

* سنه بروج the year of the constellations.

Naurôz (the new-year's day), but within the first ten days of the year; but if *ubout* is not added, it means exactly the day mentioned; for example, it sets in on the tenth day of the year, means that it sets regularly in on the tenth. At the time when the ancient Arabic pilots wrote their works, the radical Jalálian year was not yet established, neither were the Roman months known in these countries, and they calculated, therefore, according to the *Yazdajirdian* year; but the calculation of the *Jalálian* year is much easier. Be it known, that at the time when the above-said book (the Column of Suleima'n Ben Ahmad) was translated, the *Naurôze Sultáni*, that is to say, the Jalálian new-year's day, fell on the 135th day of the Yazdajirdian year, that is to say, on the 15th of Mordád*.

The monsoons are of two sorts, the western ones, called by the seamen *Rihi Kews*†, the second, the eastern ones called *Ríhi Azíb*‡, and *Sabá*§. The eastern monsoons sub-divide again in two classes; during the first, the Indian seas are shut; nevertheless, they are called *Mausim*‖ (season).

Section 3. *The first sub-division of the first sort called Ráser-ríh*; (headwind), or the monsoon of the olives, (Mausimí zaitáni.)*

The monsoon of *Aden*, *Gujerat*, and *Concona*, from the 130th day of the Yazdajirdian year, which is the 360th of the Jalálian, that is, five days before the next new-year's day (16th March). The point from which it arises is Aden; sometimes it ceases within the 170th of the Yazdajirian year, which is the 35th Jal. (24th April). From *Aden* ships set out within the 150th or 160th day of the Yazdajirdian year, which answer to the 15th or 25th Jal. (4-14th April), they arrive on the 180th of the Yazdajirdian, or 45th of the Jalálian year (4th May), at *Sheher;* proceed from thence to *Gujurat* and *Concona*, but not onwards to *Manibar*†† (Malabar), where there is much rain and danger.

2. The monsoon of *Sheher*, *Gujerat*, *Malabar* and *Concan*. The highest monsoon of Gujerat sets in within the 150th of the Yazdajirdian, or 18th of the Jalálian year (7th April). The highest monsoon of *Concan* sets in *within* the 140th Yazdajirdian or 5th Jalálian (25th March). The monsoon of Malabar within the 130th Yazdajirdian or 360th Jalálian (16th March), five days before the beginning of next year‡‡.

3. The monsoon of *Dhofár*, *Gujerat*, and *Malabar*, sets in within the 100th Yazdajirdian = 330th Jalálian (14th February): when the navigation is open to all India, for *Dhofár* is the place from whence the *Ríhi Kews* (the western monsoon) sets forth, which blows within the 70th day of the Yazd. year, equal to the 300th of the Jalálian (15th Jan.)

* The Yazdajirdian Naurôz falling in the year 1553, on the 28th October, the *Jalálian*, on the 135th day, answered to the 12th of March, 1554; this is, however, not the true equinox, which in the year 1554 fell on the 11th, on which day the longitude of the sun was = 0.

منبار†† راس الريح ** موسم ‖ صبا § ريح اذيب ‡ ريح كوس †

‡‡ Here the calculation does not answer, as the number of the one or the other must be changed if the difference of 135 should be made out: this is also the case with the two following ones.

4. The monsoon of the shore of *Gujerat* occurs within the 160th day of the Yazdajirdian, equal to 25th of the Jalálian (14th April).

5. The monsoon of the coast of *Meshkassa**, *Hairíja*†, *Sheher*, and *Aden* sets, in within (about) the 170th day of the Yazdajerdian year, equal to 35th of the Jalálian (24th April).

The monsoons below the wind, that is of the parts of India situated below the wind, are the following:

6. The monsoon of *Gujerat*, to sail for *Malacca*, *Shomotora*, *Tanassari*, *Bengal*, and all the tracts situated below the wind, sets in about the 130th day of the Yazdajirdian year, equal to 360th of the Jalálian‡, and lasts till the 170th Yazdajirdian, equal to 25th Jalálian (24th April); the highest monsoon sets in about the 150th day of the Yazdajirdian year, answering to the 15th of the Jaláliau.

7. The monsoon of *Concona* to sail for *Malacca*, *Shomotora*§, *Tanassari*, *Martaban* and *Fáiká*‖, and all the tracts situated below the wind, sets in within the 140th day of the Yazdajirdian year, or on the fifth day before the Jalálian new-year's day (16th March), and lasts till to the 180th day of the Yazdajirdian year, equal to the 45th of the Jalálian year (4th May); the highest monsoon sets in about the 160th or 150th day of the Yazdajirdian year, answering to the 25th or 15th of the Jalálian (4th—14th April).

8. The monsoon of *Malabar*, to sail for *Malacca*, *Shomotora*, *Tanassari*, *Martaban*, and *Bengal*, and all the ports situated below the wind, sets in about the 160th day of the Yazdajirdian year, answering to the 25th of the Jalálian (14th April).

9. The monsoon of *Díbi*¶, for *Malacca*, *Shomotora*, *Tanassari*, *Martaban*, and *Bengal*, and all the ports situated below the wind, sets in within the 160th day of the Yazdajirdian year, equal to 25th of the Jalálian (14th April).

10. The monsoon of *Sheher*, for sailing to *Malacca*, *Shomotora*, *Tanassari*, *Martaban*, and *Bengal*, and all the ports situated below the wind, sets in within the 110th day of the Yazdajirdian year**, which answers to the 340th of the Jalálian; but from *Sheher* to *Fartak*, you meet the western wind *Kaus*, which sets in about the 130th Yazd. or 360th Jalálian, five days before the new-year's day, and six days if there be an intercalary one (16th March).

11. The monsoon of *Fartak* for the above said ports sets in on the same day.

12. The monsoon of *Dhofár* for *Malacca*, *Shomotora*, *Tanassari*, *Martaban*, and *Bengal*, and all the ports situated below the wind, sets in about the 10th day of the Yazdajirdian, equal to 340th Jelálian (24th Feb.)

13. The monsoon of *Muscat*, for *Malacca*, *Shomotora*, to the continent of *Siam*, *Bengal*, and all the ports below the wind, sets in about the 130th day of the Yazdajirdian year, equal to 360th of the Jalálian (16th March).

14. The monsoon of *Zclaa* and *Berberi*, for *Sheher* and *Meshkara*††, the highest (strongest) sets in about the 120th Yazd. equal to 85th Jal. (13 Juue).

15. The monsoon of *Aden*, for *Sheher* and *Meshkara*, at the same time.

* Muscat? † الحرايق ‡ Here is the same error of calculation above observed.

§ Sumatra. ‖ Pegu. ¶ The Maldives. ** There is also a want of agreement in this date. †† Larhkhara?

16. The monsoon of *Aden*, for *Hormúz*, sets in about the 190th day Yazdajirdian, equal to 55th, or the 200th equal to 65th Jalálian, (14th or 24th May) : later, it is not good.

Section 4. *The second sub-division of the first sort of monsoon, which is the end of Kaws, called by some Tirmah, and by some Damáni.*

17. The monsoon of *Mecca*, or rather of its port *Jedda*, to *Malabar, Concona, Gujerat*, and *Hormúz*, sets in about the 280th day of the Yazdajirdian year, answering to the 145th of the Jalálian (12th August).

18. The monsoon of *Sewakin**, to *Malabar, Concona, Gujerat*, sets in about the 280th day of the Yazdajirdian year, equal to 145th of the Jalálian.

19. The monsoon of *Sílá* and *Berberi* to *Malabar, Concan, Gujerat, Hormúz*, sets in about the 290th day of the Yazdajirdian year, equal to 150th of the Jalálian (17th August).

20. The monsoon of *Aden* to *Malabar, Concona, Gujerat*, sets in about the same time, or five days later ; that is to say, on the 155th or 160th day of the Jalálian year (22nd—27th August).

21. The monsoon of *Sheher* to *Malabar, Concona, Gujerat*, sets in on the 300th day of the Yazdajirdian year, answering to the 165th of the Jalálian year (2nd September).

22. The monsoon of *Meshkara* for sailing to *Malabar, Concona, Gujerat*, springs up on the 300th day of the Yazdajirdian year, which answers to the 165th of the Jalálian, according to the rule above-mentioned.

23. The monsoon of *Dhofár* for *Malabar, Concona, Gujerat, Hormúz*, sets in on the 300th day of the Yazdajirdian year, answering to the 165th of the Jalálian (2nd September).

24. The *monsoon* of *Fartak* and *Aden*, for sailing to Hormúz, sets in about the 290th day of the Yazdajirdian year, answering to the 155th of the Jalálian (22nd August).

25. The monsoon of *Kaulahát* and *Muscat* to *Gujerat* and *Concona*, sets in on the 300th day of the Yazdajirdian year, which is the 165th of the Jalálian ; from this time up to the 180th or 190th Yazd. or 45th,—55th, day of the Jal. year (4th—14th May), the navigation is open to all India. The monsoons below the wind, which blow at this time from the Arabian continent and the coasts, and the other countries below the wind, are :

26. The monsoon for sailing from *Aden* to *Malacca, Shomotora, Tunassari, Martaban, Bengal*, and all the ports situated below the wind, sets in about the 280th day of the Yazdajirdian, that is, the 145th of the Jalálian year (12th August).

27. The monsoon of *Sheher* and *Meshkara*, to the above said ports, sets in about the 290th day of the Yazdajirdian year, which is the 155th of the Jalálian (22nd August).

28. The monsoon of *Gujerat*, for sailing to *Shomotora, Tanassari, Bengal*, and all the ports situated below the wind, sets in on the 300th day of the Yazdajirdian, equal to 166th of the Jalálian year (2nd September).

29. The monsoon of *Concona*, to sail from it to the above ports, is setting in on the 305th day of the Yazdajirdian year, which is the 170th of the Jalalian (6th September).

* Opposite to Jedda.

30. The monsoon for sailing from *Malabar* to *Malacca, Shomotora, Tanassari,* and all the ports below the wind, sets in about the 320th day of the Yazdajirdian year, equal to 185th of the Jalálian year (21st Sept).

31. The monsoon for sailing from *Dibi* to *Malacca, Shomotora, Tanassari, Martaban, Bengal,* sets in about the 320th day of the Yazdajirdian year, answering to the 185th of the Jalálian (21st Sept.)

32. The monsoon of the continent of *Alinat (? Barronat)* for sailing from it to *Siam,* is setting in on the 325th day of the Yazdajirdian, that is on the 190th of the Jalálian year (26th Sept.)

33. The monsoon of the coasts for sailing to *Hormúz,* sets in about the 300th day of the Yazdajirdian, that is to say, the 185th of the Jalálian year (21st Sept.?)

34. The monsoon from the coasts and *Maukadash* (in Africa) to *Jazreddíb* (the Maldives) sets in about the 320th day of the Yazdajirdian, that is to say, the 185th of the Jalálian year (21st Sept.)

35. The monsoon for sailing from the coasts to the Arabian continent, to *Dhofár, Meshkaun, Hairíja, Sheher, Aden,* sets in on the 325th day of the Yazdajirdian year, that is, on the 190th Jal. (26th Sept.)

Section 5. The second class of monsoons, that is the eastern ones called Azíb or Sabá.*

36. The monsoon for sailing from *Gujerat* to all the Arabian islands, springs up about the 340th day of the Yazdajirdian year, answering to the 205th Jal. (11th Oct.) and lasts till to the 340th or 350th, that is, till to the 5th or 15th day of the Jalálian year (5th March); but to *Kaulhat, Muscat,* and *Hormúz,* it may be used till the 60th day of the Yazdajirdian year, or the 25th of the Jalálian (14th April); later it is not good.

The finest monsoon for sailing from India to the Arabian continent sets in about the 100th and 110th day of the Yazdajirdian year, which is the 330th or 340th of the Jalálian (13th—23rd February).

37. The monsoon from *Concona* to the Arabian continent sets in about the 350th day of the Yazdajirdian year, and lasts till the 140th of the next; that is to say, from the 205th till to the 5th of the next Jalálian year, (11th Oct.—25th March:) later it is not good; that for *Hormúz* lasts till to the 150th of the Yazdajirdian, that is to say, the 15th of the Jalálian year.

38. The monsoon from *Hormúz* to the Arabian continent sets in about the 340th day of the Yazdajirdian year, lasting to the 100th of the next; that is to say, from the 205th to the 330th of the Jalálian year (11th Oct.—13th Feb.). This is for the coasting voyage; but if the high sea is kept, it serves from about the 100th day of the Yazdajirdian year, to the 30th of the next; that is to say, from the 330th to the 365th Jal. (13th Feb.—2nd March).

39. The monsoon from *Gujerat* to the coasts, blows from about the 340th day of the Yazdajirdian year to the 90th of the next year; that is, from the 205th to the 320th of the Jalálian (11th Oct.—3rd Feb.)

40. The monsoon from *Bengal* to *Aden* and *Mecca,* that is to say, to the ports of *Jedda* and *Hormúz,* sets in about the 50th day of the Yazda-

* صبا

jirdian year, and lasts till to the 80th; that is, from the 280th to the 310th of the Jalálian year (25th Dec.—25th Jan.); but for sailing to the continent of *Alinat (? Barronat)* and the island of Ceylon, it sets in about the 100th day of the Yazdajirdian, equal to 330th Jalálian (13th Feb.)

41. The monsoon for sailing from *Malacca* to *Jedda, Aden, Hormúz,* blows from about the 50th day of the Yazd. year, to about the 100th; that is to say, from about the 280th day till to the 330th Jal. (25th Dec.—13th Feb.)

42. The monsoon from *Tanassari* and *Martaban,* to *Jedda, Aden,* and *Hormúz,* blows like that for Bengal and Malacca.

43. The monsoon from *Shomotora* to *Jedda, Aden, Hormúz,* blows from about the 30th day of the Yazdajirdian year, till to the 90th; that is to say, from the 260th to the 320th of the Jalálian year (5th Dec.—3rd Feb.)

44. The monsoon for sailing from *Shomotora* to *Bengal,* blows from about 100th to 150th day of the Yazdajirdian year; that is to say, from the 330th till to the 15th of the next Jalálian year (13th Feb.—4th April).

45. The *monsoon* of *Tunassari* is the same with that of Bengal.

46. The monsoon of *Jazreddib* to *Aden* and the whole Arabian continent, blows from the 10th to about the 120th day of the Yazd. year; that is, from the 240th till about the 350th day of the Jalálian year (5th Nov.—5th Mar.)

47. The monsoon of *Diúl Sind,* for sailing from thence to the Arabian continent, blows from the 10th of the Yazdajirdian year to about the 120th; that is, from the 240th to about the 350th of the Jalálian (ditto).

48. The monsoon of *Mélandi* to *Jazrul Kamr,* (island of the moon*,) blows from about the 80th to the 100th of the Yazdajirdian year; that is, from the 310th to the 330th of the Jalálian (24th Jan.—13th Feb.)

49. The monsoon of *Kíluí* for sailing to *Sofula*†, blows from the 10th to the 60th of the Yazdajirdian, that is, from the 240th to the 290th of the Jalálian year (15th Nov.—4th Jan.)

50. The monsoon from *Sofula* to *Kíluí,* blows from about the 160th to the 190th of the Yazdajirdian year; that is to say, from the 25th to the 55th Jal. (14th April—14th May.) The finest lasts till about the 170th Yazd. 35th Jal. (24th April.)

The dates of these monsoons are given according to the dates of the year in which this book was written in, and are ten days later then those given by the master *Súleimán Ben Ahmad,* the author of the *Omdat* (column). If the calculation is made in the Yazdajirdian years, it is necessary to take into account the intercalary years; but in the calculation of Jalálian years, the same order may be always followed up.

The truth of these statements, and the error of the calculation (as it is impossible to guess anywhere else, but on the spot, which of the two numbers may be the right or false one), are only to be elucidated in India itself, and are referred therefore by the translator to the learned members of the Asiatic Societies of Calcutta, Bombay, and Madras.

[We have added to the above the English dates for the present year, making the Jaláli year begin on the 21st March, with the vernal equinox.—Ed.]

* Madagascar. † On the coast of Africa.

II.—*Account of some Inscriptions in the Abyssinian character, found at Hassan Ghorâb, near Aden, on the Arabian coast. By Lieutenant* Wellsted, *Indian Navy, attached to the Survey department.*

[In an Extract from Lieutenant Wellsted's Journal, communicated by the Right Honorable the Governor in Council at Bombay to the Asiatic Society, and read at the Meeting of the 5th November.]

"On the morning of the 6th of May, 1834, we anchored in the Honorable Company's Surveying Ship *Palinurus* on the Arabian coast, in a short and narrow channel, formed on the one hand by a low rocky islet, and on the other, by a lofty black-looking bluff, to which our pilot applied the designation of Hassan Ghorâb. Some ruins having been perceived on the summit of the latter, a party shortly after our arrival proceeded to the shore for the purpose of examining them. To avoid the swell which rolled along the opposite side of the island, and produced a considerable surf against the seaward face of the cliff, as it rose up perpendicularly from the sea, we pulled into a small bay on the N. E. side, where the water was much smoother. Landing on a sandy belt, which extended from the margin of the sea to the base of the hill, we found ourselves amidst the ruins of numerous houses, walls, and towers. The houses are small, of a square form; and have mostly four rooms, on a single floor; the walls appear to have been carried along the face of the hill in parallel lines, at different heights;—several towers also occur at scattered distances. The hill on this side, for one-third of its height, ascends with a moderate acclivity, and along the slope, the ruins are thickly scattered; there are, however, no remains of public buildings or edifices, nor are there any traces of arches or columns. The whole have been constructed from fragments detached from the rock, and from the several patches which remain, it is very certain that the greater number must have been covered over with cement; both this and the mortar, from the action of the weather, have almost entirely disappeared. The cement appears from the traces yet left on the beach, to have been obtained, as it is at present in many parts of the Arabian coast, by the calcination of coral. A further examination during an extension of our walk round the side of the hill, enabled us to discover that Hassan Ghorâb was about 500 feet in height, that it was composed of a dark greyish-coloured compact limestone, and that it had been formerly insulated, though it was now connected to the main by a low sandy isthmus, which had been blown up there by the violence of the S. W. winds, and was evidently of recent formation. The action of the sea might indeed be traced in the cavities and hollows exhibited by a ridge of rocks now at some distance from the water, but which it was evident at no very distant

period must have been covered by it. During this time we had been looking in vain for some path by which we might ascend to the summit, but it appeared inaccessible on every side, and we had almost given up our search, when one of the party suggested, that two towers, which were standing by themselves, might possibly have commanded the approach and entrance to one; scrambling accordingly over the ruins formed by the falling of the upper part of these, we at length discovered some faint traces of a track, which in order to facilitate the ascent had been cut along the face of the hill in a zig-zag direction. But beyond and above that the steep front of the cliff had been cut down so as to form a sort of terrace, and even here the path at the widest part would not admit more than two abreast; there being a steep precipice above and below us, we did not find it a very pleasant road; on a rock to the right, about one-third the ascent from the top, we discovered the inscriptions, which I have subjoined. The characters were two and a half inches in length, and it will be seen, are executed with much care, order, and regularity. In order to avoid the possibility of omission or error, three separate copies were taken by different individuals, which have all been subsequently examined and compared. Continuing our route from hence to the top of the hill, houses nearly as numerous as below, walls, and other defensive edifices, were perceived at various distances, scattered over its surface, and on the verge of the precipice a square tower of massive masonry had been erected; it has probably served both as a watch-tower and light-house. Some of the stones are of very large dimensions, the windows and doors are plain, and no arches are to be seen; about one hundred yards from the tower the tanks are situated, they have been excavated with much labor out of the solid rock and are cemented inside.

Having now surveyed every part of the hill, we could not but come to the conclusion that it had been formed both by nature and art as a place of extraordinary strength: while the former had left it inaccessible at but one point, the latter had so completely fortified it at that quarter, that it would be impossible for courage or address, however consummate, to scale it. But what, independent of this advantage, must have given it to foreigners its principal value, would have been its insular position, which, when we consider the lawless and barbarous character that the inhabitants of this coast have borne from the earliest period, must to them, both as a retreat essential to their public safety, and also as a magazine, have rendered it invaluable.

The circumstances of its possessing two harbours affording anchorage in either monsoon, on a coast remarkably destitute of any (as yet discovered) so well sheltered, would appear to indicate a commercial

character to the town. But it is to the inscription we must look for the elucidation of this point, as well as to the several others connected with it.

The origin and purport of the inscriptions which have been found by various travellers inscribed on the faces of several mountains and hills in Arabia, have engaged the attention and excited the inquiries of the learned during the greater part of the last, and the early part of the present, century, and many copies have been transmitted to Europe for their investigation. Many of these I have in my possession, or have referred to; but this differs in the nature of its characters from them all.

I forbear, therefore, until this shall be deciphered, from making any other suggestions or remarks, than those which I have submitted relating to the local features of the spot on which they were found. I cannot however neglect to draw attention to the obvious and striking coincidence between the distance of the ports of Hassan Ghorâb, as deduced from our survey, and that specified by Arrian, as the distance of the port of cave Canum or Kane, from the port called Arabia Felix, which modern geographers with much confidence place at the present harbour of Aden.

The natives possessed no information respecting the ruins, excepting that they had always heard their erection ascribed to the "foreigners."

The dimensions of the Tanks alluded to as cut out of the rock, were as follows:

	Length.	*Breadth.*	*Depth.*
No. 1, Square,	32 ft. 8 in.	29 ft. 5 in.	14 ft. 0 in.
No. 2, Long-oval,	42 do. 7 do.	17 do. 2 do.	12 do. 11 do.
No. 3, Semi-elliptical,	70 do. 5 do.	12 do. 0 do.	variable.
No. 4, Oblong,	30 do. 6 do.	9 do. 6 do.	9 do. 1 do.

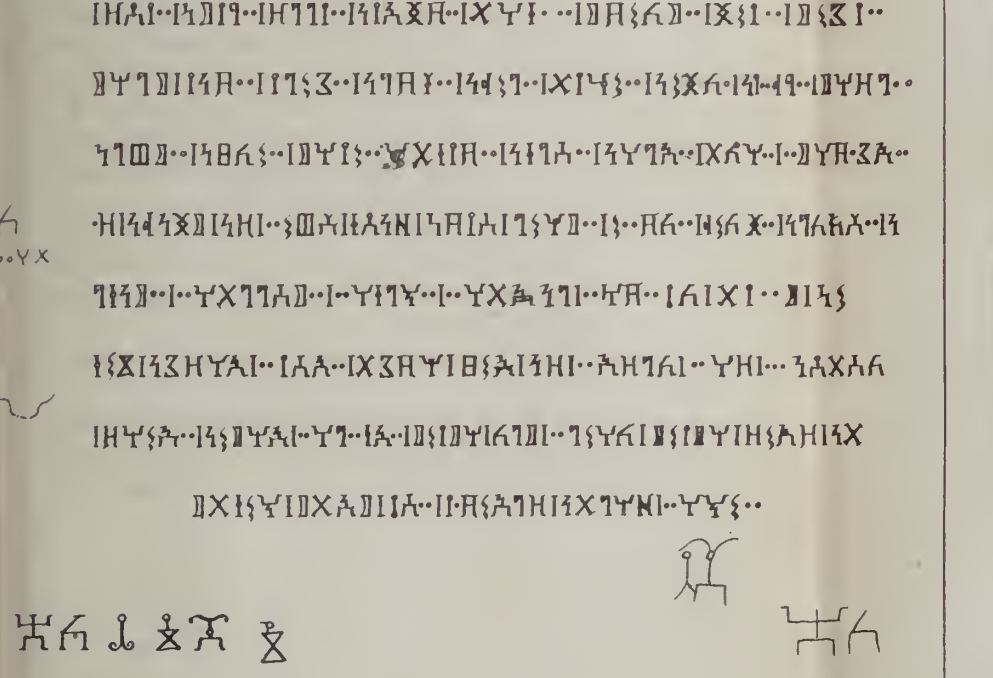
[We have omitted in the plate the specimens of ancient and modern Ethiopic from the inscriptions at Axum, because they may be found in BRUCE, Lord VALENTIA, or in any catalogue of ancient alphabets. Lieut. WELLSTED remarks that the inscription found at Hassan Ghorâb, on close examination, resembles both ancient and modern Ethiopic. The Ethiopians ruled Yemen, a part of Arabia, previous to the appearance of Muhammed.—ED.]

III.—*Further Information on the Topes of Mánikyála, being the translation of an Extract from a Manuscript Memoir on Ancient Taxila, by Mons.* A. COURT, *Engineer Officer in the Army of Mahárájá* RANJIT SINGH.

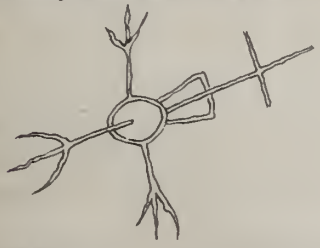
[We have to thank Captain WADE for procuring us the favor of the following extract for insertion in the Journal. It continues our history of the opening of these monuments from the period to which it was brought up by Dr. GERARD'S notice of Dr. MARTIN'S operations, at page 332. We regret that M. COURT had

Ethiopic Inscriptions at Hosen Ghorab in Arabia.

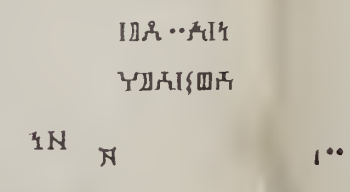
N.° 1.— Engraved on a smooth piece of rock forming one side of the terrace.



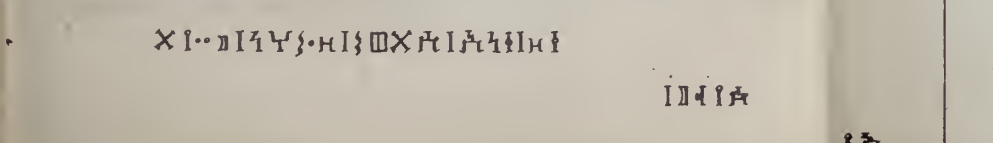
N.° 2.— Engraved on the upper surface of a stone close by the next short inscription.



N.° 3.— Found on a small detached rock, on the summit of the hill.



N.° 4.— Found near the long inscription, lower down on the terrace.



not seen what had already appeared on the subject, as it would necessarily have altered his views of the antiquity of the monument, if not of its origin. We hope to obtain a copy of the inscriptions, which will probably be in the same dialect of the Pehlevi as occurs on the cylinders.—Ed.]

Manikyála is the name of a small village situated on the route leading from Attok to Láhor. It is built on the ruins of a very ancient town of unknown origin. The geographical position of these ruins, and particularly the abundance of coins found among them, afford the presumption that this city must have been the capital of all the country between the Indus and the Hydaspes, a country which the ancients knew by the name of *Taxila*, and of which frequent mention is made in the history of Alexander.

There is at *Manikyála* a vast and massive cupola of great antiquity. It is visible at a considerable distance, having a height of about 80 feet, with 310 or 320 of circumference. It is solidly built of quarried stones with lime cement. The outer layer is of sandstone. In the interior, the masonry is of freestone (pierre de taille), mixed with sandstone (grès) and granite; but principally, with a shelly limestone (pierre de concretions), which by its porosity resembles stalactite. Age and exposure have so worn away the northern face of the edifice, that it is now easy to ascend to the summit, which could not have been done formerly, because there were no regular steps constructed on the exterior. Its architecture is simple, and offers nothing worthy of much remark. Round the circumference, near the base, is seen, in bas-relief, a range of small columns, the capitals of which appear to have been ornamented with ram's heads (têtes de beliers). These ornaments are now scarcely perceptible on account of the wearing away of the sandstone by time. I have remarked similar ornaments at a tank situated between *Bimber* and *Serai-saidábád*, on the road to Cashmír, and I remember observing the same kind of thing on the columns of the towns at Persepolis.

This monument is in my opinion nothing more than a tomb of some ancient king of the country, or it may be the work of some conqueror from Persia or Bactria, who may have raised it in memory of some battle fought on the spot, intended to cover the remains of the warriors who fell in the combat. This last conjecture appears the more probable, seeing that similar cupolas are equally remarked in the district of *Rável Pindi*, in the country of the *Hazáris*, which joins the former, at *Péshávar*, in the *Khaiber* hills, at *Jelálábád*, at *Laqmán*, at *Kábul*, and even, they say, at *Bámian*:—all of them places situated on the road leading from Persia, or Bactriana, into Hindustán. I have moreover remarked, that the greater part of these cupolas are situated in

passes difficult to get through, or at least in places well adapted for a hostile encounter. One thing is certain at any rate, namely, that they are all sepulchral tumuli; for having myself opened several of these cupolas, I have found in most of them, little urns of bronze, or other metal, or of baked clay, containing funeral ashes, or the debris of human bones; also jewels, and coins for the most part of Græco-Scythic, or Græco-Indian types.

The Muhammedans of the neighbourhood pretend to say, that the tope contained the remains of all the Musulmans who perished in the battle which took place in this place between the Afgháns and the army of Rájá Mán; but besides, that the religion of Muhammed opposes the erection of monuments to the dead, (?) the antiquity of the building and of the medals it contained prove to be far prior to the time of the Muhammedan incursions.

The Hindus of the country resort to the spot to offer up the first cuttings of the hair of their male children—a custom which is said to have prevailed anciently in Greece.

Scattered over the site of the ruins of Mánikyála are seen the remains of fifteen other cupolas, smaller than the principal one just described. These I have lately been engaged in digging up, and they have furnished some very interesting discoveries. The excavation of a tope situated about a cannon shot distant from the present village of Mánikyála to the N. N. E. is particularly calculated to throw light upon these curious monuments of antiquity, since a part of the medals extracted from it bear genuine Latin characters, while others are of the Græco-Scythic or Græco-Indian type. Moreover, the stone which served as a covering to the niche which contained them, is sculptured all over with inscriptions in an unknown character, and altogether different from that of the coins?

This cupola is laid down as No. 2, in my map of the place. It was in a thorough state of dilapidation, so as hardly to be observed; and it was only after having carefully examined the contour of the foundation that I decided upon penetrating it. Its height might be 60 or 70 feet. I began by piercing it from above in the centre with a hole of 20 feet diameter. The materials extracted were chiefly a coarse concrete, extremely porous. The nature of the stone reminded me forcibly of the pyramids of Egypt, which are constructed of a limestone full of shell impressions, (nummulitic limestone.)

In my first operations, I found, at the depth of three feet, a squared stone, on which were deposited four copper coins. Below this point, the work became extremely difficult, from the enormous size of the blocks of stone, which could hardly be removed through the upper

opening. At ten feet lower down, or at ten from the level of the ground, we met with a cell in the form of a rectangular parallelogram, built in a solid manner, with well dressed stones, firmly united with mortar. The four sides of the cell corresponded with the four cardinal points, and it was covered with a single massive stone. Having turned this over, I perceived that it was covered with inscriptions.

In the centre of the hollow cell stood a copper urn, encircling which were placed symmetrically eight medals of the same metal, which were completely corroded with verdigris. The urn itself was carefully enveloped in a wrapper of white linen, tightly adhering to its surface, and which fell into shreds when I opened the urn*. The copper urn enclosed a smaller one of silver: the space between them being filled with a paste of the colour of raw umber (terre d'ombre), in which the verdigris had begun to form. This pasty matter was light, without smell, and still wet. On breaking it, I discovered a thread of cotton gathered up into a knot (ramassé en au seul point), and which was reduced to dust on handling it. When I attempted to remove the silver urn from within the outer cylinder, its bottom remained attached to the brown sediment, and I remarked that the silver was become quite brittle from age, crumbling into bits between the fingers. Within the silver urn was found one much smaller of gold, immersed in the same brown paste, in which were also contained *seven silver medals*, with *Latin characters*. The gold vessel enclosed four small coins of gold of the Græco-Scythic or Græco-Indian type;—also two precious stones and four pearls in a decayed state; the holes perforated in them prove them to have been the pendents of carrings.

From the position in which these several urns were found, an allusion was possibly intended to the ages of the world. The four gold coins were of far inferior fabrication to those of silver. The latter are worn as if they had been a long time in circulation. Whether they are Greek or Roman, I cannot venture to affirm. I would only remark, that if the Greeks before the reign of Philip used the Latin alphabet, it might be probable that there were Greek coins, and that they were brought into the country by the army of Alexander. If, on the contrary, they are Roman, they may be of the epochs when the kings of India sent embassies to the Roman emperors *Augustus* or *Justinian*. Or, it is possible that they are brought into the country through the ordinary channel of commerce by the Red Sea†.

* The exterior of the copper cylinder of M. Ventura's tope has the marks of a cloth wrapper well defined on the corroded surface.—Ed.

† While correcting the press of this passage we are put in possession of M. Court's drawings of the coins, which we will make the subject of a postscript.—Ed.

The inscription on the stone is in a character that resembles the writing of the Rájpúts of the Himálaya mountains in the present day. It has also a resemblance to the Ethiopian; and it is well known, that there existed from time immemorial a communication between Egypt and India. I am surprised that my friend General Ventura did not find an inscription on the stone in the principal deposit of the large tope. On my way to *Peshávar*, I lately visited the scene of his operations, and searched carefully among the ruins for any such, but without success. This cupola was penetrated by him from above. When the cap was removed, a square shaft was found of 21 feet deep and 12 feet side, well constructed of squared stones. On the floor of this chamber there were two massive stones, between which was deposited a small box (see page 315). The floor itself was formed of two enormous stones, which were broken to pieces with some trouble before the digging could be continued below. The difficulties were much increased from this point by the frequent occurrence of large blocks of stone locked into the body of the masonry without mortar, which it was necessary to extract by the upper vent. At 27 feet below the first stage, a second was met with, of a less perfect nature, wherein a second discovery was made:—below this, again, before reaching the ground, the most interesting discovery occurred. Hence the miners worked a conduit underground, on the side towards the village of Mánikyála, which facilitated greatly the extraction of materials. This adit is now nearly closed up with rubbish, and can only be entered on all fours.

As the relics found in this cupola have been addressed by my friend to the Asiatic Society of Calcutta, I refrain from any observations on them. I will only remark, that the emblem on the gold medals of Mánikyála, as well as on those of my topes, may be observed in Persia with some slight difference, on the sculptures at Bistaun, near Kermanshâh; I think also, the same symbol exists at Persepolis. I can with confidence assert that the monogram  exists on the bas-relief of the gate of the ancient castle of Shastar in *Susiana*.

I have observed that most of the cupolas of *Mánikyála* are situated on the ridges of sandstone rock which cross up from the surface of the country.

The neighbourhood is generally strewed with ruins, and traces of a square building can generally be perceived, in the immediate vicinity, of similar construction to that of a Persian caravanserai. If these monuments are the remains of temples, there can be no doubt, that Mánikyála must have been the principal seat of the religion of the country. The ruins of the town itself are of very considerable extent:—every where, on digging, massive walls of solid stone

and lime are met with—and a great number of wells; but almost all now filled up: these latter are all built of cut stone. All the neighbouring heights are garnished with tombs; and it is known that the ancient Persians, the Scythians, and even the Hindus selected eminences to erect their tombs on, especially those of their chiefs. They are all adjusted to face the cardinal points of the compass.

The whole country overlooked by Mánikyála must have been once a vast plateau, which in the course of ages, and by the continued action of the annual rains, has undergone a complete change. It is now cut every where into deep ravines, which render it very difficult to traverse. The country is sprinkled with wretched hovels; but the natural aspect of the plains is singularly bare and barren. The immediate vicinity of the hills is, however, varied with the meagre foliage of a thorny shrub.

This district (canton) is now called *Patwár*. That it was formerly very populous, is proved by the quantity of ruins of old houses. According to the inhabitants, the whole space that now separates Mánikyála from the ruins of Tamniak, which is about 16 kros of the country distant, was so thickly covered with houses, that the two towns might be considered as one. They add, that mulberries and other fruit trees flourished there exceedingly. The devastation now witnessed can only be laid to the account of its being the thoroughfare of all the conquerors who in turns sallied forth to ravage India.

It appears that the aborigines of the country were Hindus, to whom were joined the *Pandavas*, worshippers of the sun, and the *Chandrabansís*, worshippers of the moon. Subsequently, a mixture took place with the Persians, the Scythians, and even with the Greeks, for the *Ghekhers*, so frequently talked of in the country, are nothing more than the descendants of the Greek colony that Alexander left on the banks of the Indus, or perhaps the Greeks of the kingdom of Bactria, of which this district for a long time formed a part. What I here advance is upon good foundation, for the people themselves insist, that the Ghekhers are descended from the *Khéianis*, ancient Persians, or from the *Rúmís*; and it is well known that all Oriental nations apply this last term to Greece: hence we may conclude that *Ghekher* is but a corruption of the word *Greek*. Moreover, the numerous medals discovered with Greek legends tend strongly to confirm this idea.

The country appears to have been conquered by the Persians long before the time of Alexander. This is proved by the Persian medals found; further, an ancient tradition of Persia alludes to an invasion that our chronologists refer to the fourteenth century before Christ. It is also known, that under Darius, the son of Hystaspes, this country and all up to the banks of the Indus, formed one of the twenty satrapies of the vast Persian empire.

Alexander traversed it in 326 B.C. At the death of this conqueror, it was annexed to Bactriana, raised into a separate kingdom by the Greeks, who revolted from his successors. It then fell into the hands of the Scythians, who destroyed this latter kingdom.

Splendid collections of coins might be made in this country. They are found principally at *Mánikyála, Djlún, Pind-dádan Khán ;* at *Nílí Daulla, Rával Pindí,* and in the districts of the *Hazáris* and *Hazáron*. They were formerly worked up into *lotas* and cooking vessels, and ornaments. It was only in 1829, the period when my researches commenced, that the inhabitants began to appreciate their value. The copper coins are most numerous ; the fear of being supposed to have dug up a treasure leads the inhabitants to melt up those of silver and gold, which makes their preservation comparatively rare.

The immense store of coins constantly dug up proves that this country was formerly in a flourishing state; and that in consequence of the frequent invasions of India, its riches were constantly hidden by burial, and so preserved. By far the greater portion of the coins are Græco-Scythian, or Græco-Indian ; others again are altogether Indian ; the latter are the most ancient : they are in a Devanágari character now unknown to the natives*. There are found also Græco-Persian coins, and sometimes pure Persian ones. These last represent the fire altar, with two guards to preserve it. I find that their costume has a striking resemblance to that of the present inhabitants of *Patwár,* who allow their hair to fall behind the head in large tufts of curls, and wear frequently the ample plaited pantaloon represented on the two warriors of the coins.

Mánikyála is at 40 kurors E.S.E. of the fortress of Attok, and at 34 N. W. of the city of *Jilim.*

The ruins of the town of *Ramma,* attributed to *Sita-Rám,* are at 13 kurors S. S. W. of Mánikyála. Those of *Parvala,* ascribed to the era of the *Pandavas,* are at 12 *kurors* to the north. The traces of the town of *Dangéli* are at 14 *kurors* on the east. This last place flourished under the *Ghekhers,* whose sovereigns fixed their residence there. *Makkhyala,* near *Rotás : Benda* and *Tamial* near *Ravel-Píndi* are also places formerly occupied by the *Ghekhers.*

IV.—*Note on the Coins discovered by M.* Court. *By* Jas. Prinsep, *&c.*

Since the above paper went to press, I have received through M. Meifredy, the drawings made by M. Court, of the several coins, and

* I know not to which species of coin the above passage alludes : hitherto the number discovered in those parts with the Delhi character on them has been very small. The *Samagri deva* and the Canouj coins are numerous, but they are evidently much more recent than the Bactrian and Indo-Scythic.—J. P.

of the inscription alluded to in his remarks. The original drawings being destined for Paris, I have, with permission, had fac similes lithographed of the whole, as they are of the highest importance towards the elucidation of the history of the ancient monuments at Mánikyála.

Plate XXXIV. figs. 1, 2, 3, and 4, are the four coins found on the top of the large stone which served as a cover to the niche, containing the principal deposit. These coins are already well known to us, the first being the common copper coin of Kadphises (in this instance written ΚΑΔΦΙCΥC) : the other three being of KANHPKI. The reverses on the latter coins are however different from those described in my paper on the subject (page 449) : the running or dancing figure of fig. 2, has occurred but rarely, among the coins heretofore collected, in comparison with the more common device of *Mithra* or *Nanaia*; and where it does, the name is less distinct. The reverse of figs. 3 and 4, is evidently the same personage as is represented on Gen. VENTURA's gold coin, standing in lieu of being seated ; and my conjecture, that this figure had four arms, is now substantially confirmed.

The name is distinctly composed of the four letters OKPO, which I imagine may be the corresponding word in Zend for the Sanskrit अर्क *Arka*, a common appellation of SURYA, or the sun. The Hindu image of this deity is in fact represented with four arms, and is often accompanied with a moon rising behind the shoulders, just as was depicted on the Ventura gold coin*. We can have little doubt, therefore, that in this device we behold the substitution of the Hindu form of the solar divinity for the Persian effigy of Mithra.

Plate XXXIII. Fig. 5, is stated by M. COURT to be a precise copy of the inscription found on the lower surface of the large slab of stone. This is doubtless the most valuable and important of his discoveries ; for it will inform us of the precise nature and object of the monument in question. Although my progress in decyphering the character in which it is written, of which I hope shortly to render an account, does not yet enable me to transcribe the whole, still I see very distinctly in the second line the word *Malikáo*, king, in the very same characters that occur on the reverse of so many of the Bactrian coins. This so far throws light upon the subject, that it connects the monument with royalty, and prepares us to lean more favourably to the hypothesis advanced by all those who have been engaged in opening the topes, and supported by all the traditions of the country, that they are the sepulchral monuments of kings. I shall have to recur to this question presently in speaking of the liquid contents of the metal cylinders.

* See Plate LXXXIX. of MOOR's Pantheon.

The same plate XXXIII. represents (reduced one-third) the position of the three cylinders, or urns, of gold, silver, and copper, as they stood in the niche of the under stone, surrounded by eight coins of copper, arranged in the directions of the cardinal points. The coins are mostly corroded, but they can all be recognized as belonging to KADPHISES and KANERKOS. Fig. 12, the one differing from the ordinary coins of this group, and bearing on the obverse the head of a king, with Greek legend, and on the reverse a standing figure of Hercules with his club, surrounded by a Pehlevi inscription, I know from other samples in my possession to belong to a monarch sometimes designated EOΣ, while on others of his coins he is distinctly entitled KAΔΦIC.. I have no hesitation therefore in ascribing this variety also to a monarch of the same family.

The contents of the several cylinders of M. COURT's tope were beyond all comparison the richest and most curious hitherto met with. The large tope gave M. VENTURA only two gold coins; that opened by M. Martin HONIGBERGER, presented only one gold medal of KADPHISES. Here, on the contrary, we have no less than four native gold coins, in excellent preservation, in the gold urn; and seven silver coins in the silver envelope: with this further peculiarity in the latter, that they are all of foreign origin.

The four gold coins are of a device familiar to us; they bear the legible inscription, in corrupt Greek, PAO NANO PAO KANHPKI KOPANO which I have described in my former notice. The figures on the reverse of the three first are of the Hindu cast, having four arms, with the epigraphe OKPO (the sun); they agree with that of the copper coins described in the preceding page. The last, figure 18, bears the title AΘPO, a supposed ethithet of the sun; for an explanation of which see page 453*.

The silver coins are entitled to a minute and individual examination; for, from the first glance, they are seen to belong to the medallic history of Rome, of which the most ample and elaborate catalogues and designs are at hand to facilitate their exact determination.

Fig. 19—is a silver *denarius* of MARK ANTONY, struck while he was a member of the celebrated triumvirate, charged with the eastern

* In a pamphlet just received from Paris, entitled "*Observations sur la partie de la Grammaire Comparative de M. F. Bopp, qui se rapporte à la langue Zende, par M. Eugène Burnouf*," page 7, I find the very two words alluded to in p. 453, fortuitously occurring to rectify my conjectures as to their import—*âthre* is translated *au feu*, and is evidently an inflected case of our word *âthro*, which is thus proved to signify simply 'feu,' fire, (*átars, le feu, átash*, P.):—while a little further, we find the words "si l'on trouve une fois dans le Vendidad-Sade, *maithra* pour mithra, c'est une faute du manuscript, que l'accord des autres copies suffit pour faire apercevoir."—May not the same remark apply to the ignorance of the die engravers in writing MAΘPO for MIΘPO ?

portion of the empire. It agrees with the description of a coin in Vaillant, vol. ii. p. 9.

Obverse. M. ANTONIVS. III. VIR. R. P. C. (*Triumvir Reipublicæ Constituendæ*). *Device*, a radiated head of the sun, supposed to be the same as the Egyptian Osiris.

Reverse. The head of Antony, behind which the *lituus*, or crook, denoting him to hold the priestly office of Augur.

Fig. 20.—A silver *denarius*, recognized to belong to Julius Cæsar, from the features, the inscription, and the peculiar device on the reverse. It corresponds with one described by Vaillant, ii. 1.

Obverse. The head of Cæsar, behind which a star. Medals of this kind were struck by Agrippa, Antony and others, in honor of Cæsar, after his death; the star alludes to his divine apotheosis: the letters CAESAR... remain distinct.

Reverse. The group entitled in Latin, *Orbis, Securis, Manus junctæ, Caduceus, et Fasces*, supposed to designate the extended empire, the religion, concord, peace, and justice of the emperor.

Fig. 21.—This I imagine to be a coin of Augustus Cæsar, although it does not precisely agree with any published medal of that Emperor.

Obverse... VFVS. III. VIR. Two juvenile heads, probably of Caius and Lucius. The circumscribing legend may be either of Mescinius Rufus, a magistrate, (Vaill. ii. p.23,) or of Plotius Rufus, mint master, (Vaill. ii. 4,) the only two recorded names permitting a termination in VFVS. and at the same time being Triumvirs.

Reverse. A female figure holding probably a spear in the left hand. The few letters legible seem to form part of the usual inscription on the coins of Augustus. CAESAR DIVI F. (*Augustus Cæsar divi Julii filius*).

Fig. 22.—The helmeted figure on this coin, and the unintelligible inscription on the reverse, lead me to ascribe it to the age of the Emperor Constantine, although I can find none in Bandurius nor Vaillant, with which it exactly agrees.

Obverse. A head facing the left, with a handsome helmet.

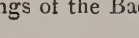
Reverse. Two combatants, one clad as a Roman, the other as a German? a fallen warrior between the two. Beneath, the letters QIERMM.

The remaining three silver coins are in too imperfect a state to be identified: the first, fig. 23, bears the final letters of the word CAESARIS. The last, figure 25, has a female head with a mural crown, which may belong to a Greek city.

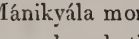
How or why these coins came to be selected for burial with the local coins of the Indo-scythic monarch, it is impossible now to conjecture; and it is certainly a most curious fact, that while in the neighbouring monument, the foreign coins consisted solely of those of the Sassanian dynasty of Persia, these should be entirely wanting here, and should be replaced by coins of Rome, many of which must have been regarded as antiques at the time, if I have been right in attributing the fourth of the list to Constantine. Such an assumption indeed removes all difficulties regarding the date, and brings about a near

accordance with the reign of SHAPUR II. of Persia, in the middle of the fourth century, the date already assigned to the principal tope from the presence of that sovereign's coins. We may therefore now look upon the epoch of the Hindu or Indo-scythian Rao KANERKI, as established from these two concurring evidences, and it may serve as a fixed point whence to trace backwards the line of strange names of other equally unknown and obscure monarchs, whose names are now daily coming to light through the medium of these coins, until they fall in with the well-known kings of the Bactrian provinces.

I once more stop the press for the purpose of noticing a very important paragraph in the second volume of *Marsden's Numismata Orientalia*, this moment received from England, materially affecting the antiquity of the Mánikyála monument.

It will be remembered, that the Sassanian coins deposited there were all of that species distinguished by an ornament of two wings upon the head-dress, and that I assigned them on the authority of KER PORTER, and for other reasons which appeared conclusive, to SHAPUR II. A. D. 310-380. There was also on some of them a curious cypher, (vide Plate XXI.)  which seemed to defy scrutiny.

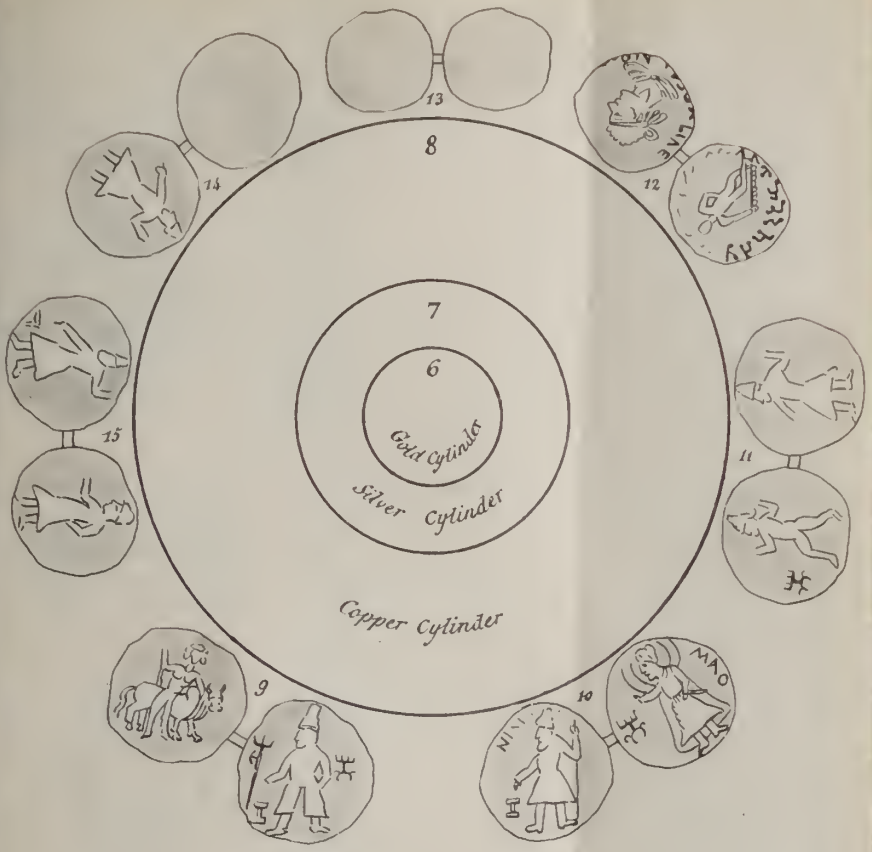
It seems that Mr. MARSDEN, on the authority of Sir WILLIAM OUSELEY, backed by the BARON DE SACY, attributes all this class of coins to *Khosrú-parviz*, A. D. 589, the Zend word *Hoslui* (for *Khosrú)* being stated to exist on many of them. They have also a cypher somewhat resembling the above.

A multitude of these coins have also been discovered bearing Arabic names, *Omar*, *Saíd*, *Harír*, &c. in addition to their usual inscription, and the fact had been explained by Mr. FRŒHN of the Petersburgh Academy*, by extracts from history, proving that the early Muhammedan conquerors of Persia retained the national coinage until 75-76, A. H., when the Khalifs AB-DUL MALEK, and HAJJAJ substituted their Cufic coin. MAKRIZI, in particular, makes the following decisive assertion: "OMAR caused dirhems to be struck with the same impressions as were in use under the KHOSROES, and of the same form, with the addition only of certain Arabic sentences, upon some, and upon others the name of the Khalif." The curious cypher above alluded to, is accordingly set down by the BARON DE SACY as *Arabic*, and he reads it, حجاج بن يوسف. The form in the original is a little different from our Mánikyála type, the termination of the first cypher having an opposite curvature  . In this form it might possibly be read *Hajáj*, although, as Mr. MARSDEN remarks, it is difficult to discover *bin Yúsuf* in the context:—but if the flourish upon the Mánikyála coin

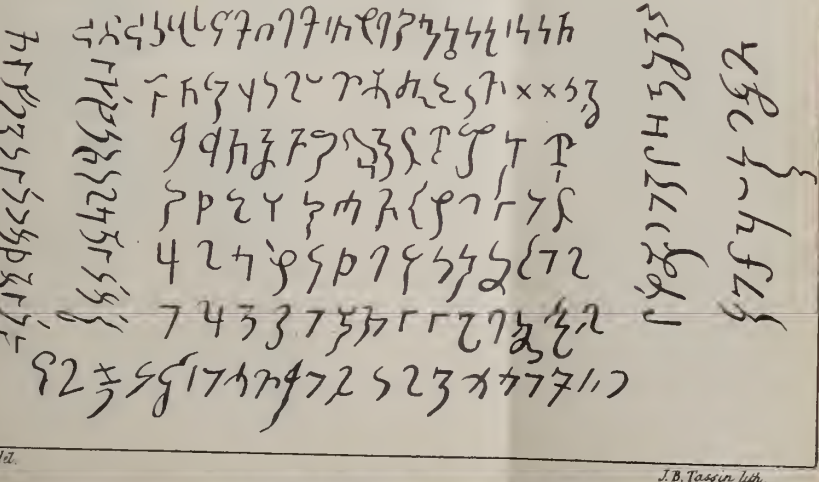
* This circumstance was pointed out to me by Captain JENKINS, as noticed on the cover of the last Journal.

Order in which the Urns were found in the stone niche.

[*reduced one third*]



5. Inscription on the stone cover.



A. Court del.

J. B. Tassin lith.

Copper Coins found above the Stone Cover

Gold Coins found in the gold Cylinder

Silver Coins found in the silver Cylinder.

is supposed to be identical with this, the interpretation is at once overturned; for it is no longer possible to construe even the first cypher into *Hajáj*, in accordance with the Baron de Sacy's reading.

Be this as it may, the undoubted Arabic names and sentences upon so many of the winged-cap Sassanian coins, tend strongly to unsettle the date I had assumed, on the authority of these coins alone, for the Mánikyála tope, and to bring their construction down into the seventh century. But here again an additional difficulty arises with regard to the Roman coins just discovered by M. Court. Is it likely that in a distant and semi-barbarous country coins of seven hundred years' old, should have been preserved and selected for burial in a shrine or tomb then erected?

The more we endeavour to examine the subject, the more difficulties and perplexities seem to arise around us; but it is only by bringing every circumstance forward that we can hope to arrive at last at any satisfactory conclusion. The two coins published in Plate XXI. will doubtless be considered of great interest by the illustrators of the Sassanian dynasty in Europe—they may destroy a favorite theory with them, as their evidence of the Arabic names tends to shake our deductions here; but we shall both be the gainers in the end, and eventually the service of an obscure history will be materially promoted by the collision of discoveries.

V.—*Note on the Brown Liquid, contained in the Cylinders from Mánikyála. By the same.*

The important discovery made known by M. Court, in the memoir just read, of another metallic vessel or urn filled with brown liquid evidently analogous to that found by General Ventura, in the great tope of Mánikyála, reminds me that I have not communicated to the Society, the results of my examination of this curious liquid. I will now proceed to supply this omission, referring to page 314 of the present volume, and to Plate XXII., for the particulars of its preservation, and of the vessels containing it. It now appears certain that the liquid was originally deposited in these receptacles, for had it permeated from the superincumbing structure, it would have filled the stone recess as well as the urn, whereas M. Court particularly describes the former as empty and dry.

When the Mánikyála relics reached Calcutta, the liquid in the outer copper vessel was nearly dried up, and the sediment had the form of a dark-brown pulverulent crust, adhering to the inner surface of the vessels. It was washed out with distilled water, and preserved in glass stoppered bottles, in which, after several months, the greater part fell to the bottom, but the liquid remained still of a deep brown, and passed the filter of the same colour.

The liquor of the inner, or brass cylinder, having the consistence of wet mud, was bottled off separately.

1. In the innermost or gold cylinder, which rested in an oblique position in the brass case, a deposit of the brown matter had in the course of ages consolidated in the lowermost corner, differing from that formed by the rapid drying, in being very hard and of a shining vitreous or resinous lustre on fracture. It enclosed fragments of the glass (or *ambre brisé*, of M. Ventura) (fig 22, a, b, c, d,) and when detached from the larger pieces of them, possessed the following properties:

Specific gravity, 1.92.

100 parts heated in a test tube gave off moisture, and a minute portion of empyreumatic oil, ...	20.0
The residue, heated red, lost of carbonaceous matter,.....	4.0
It then fused under the blow-pipe into a parti-colored slag, which pounded and divested in nitric acid, yielded of phosphate of lime (?) tainted slightly by oxide of copper,.....	12.0
The silicious or glassy residue, unexamined, weighed, ...	64.6
	100.0

2. The brown paste itself was next submitted to examination.

It was not soluble either in alcohol or ether; and after once being precipitated by acids, evaporation to dryness, &c. it was no longer soluble in water.

Nitric acid boiled upon it took a light-yellow colour, causing a slight effervescence and a brown scum to rise to the surface of the liquid; the greater part remained untouched and unchanged in colour. Sulphuric acid had no greater effect. The acid solution shewed the presence of copper in abundance.

When the brown liquid was gradually heated in a tube, to drive off its water, a slip of litmus and one of turmeric paper being introduced into the neck of the tube, there was not the slightest indication either of free acid or of alkali.

Acetite of lead threw down a heavy precipitate of a brownish-white colour, leaving the liquid clear.

The brown precipitate obtained by evaporation, when heated on platina foil, took fire for a moment, and then burnt like a coal, leaving an earthy residue, coloured by oxide of copper. When the decomposition was conducted in a test tube, reddened litmus paper being introduced, empyreumatic oil was given off with strong fumes of ammonia.

It being evident that the brown substance was chiefly composed of vegetable, with perhaps a little animal matter, carbonized and blackened by age, and mixed with earths and metallic oxides, a hasty approximate analysis was attempted in the following manner, to ascertain whether any trace of animal matter or bone was discoverable.

10 grains of the dried substance were introduced into a glass tube, to which a shape was then given by the blow-pipe, like the letter N; nitric acid was introduced in the second bend, to arrest the ammonia, which might be driven over on the destructive distillation of the substance operated on. After gradually heating the closed end of the tube red hot, that portion was broken off, the charcoal weighed, incinerated, and the ash digested in nitric acid. From the resulting solution, ammonia threw down a copious white precipitate, redissolving the oxide of copper, which was thus carried through the filter. The precipitate heated, and weighed, was redissolved, and reproduced by ammonia; while sulphuric acid

threw it down in a heavier form as sulphate of lime. It was therefore set down as phosphate of lime.

Without entering into details, the results of the analysis were as follows:

Empyreumatic oil, passed off through acid,	22.0
Ammonia and water,	19.0
Carbon, burnt off,	18.0
Silicious insoluble portion of ash,	9.0
Phosphate of lime,	10.0
Oxide of copper, and what remained in the ammonia,	22.0
	100.0

3. A separate examination of a few of the numerous yellow transparent fragments, which filled the inner cylinder, was then undertaken, principally with a view to determine whether they were of a crystalline nature, or simply glass; their behaviour under ignition having already convinced me that they were not "ambre brisé," as supposed by M. Ventura.

The specific gravity of the fragments at 77°.5 was found to be 2.40, in itself a conclusive argument as to their vitreous nature; but to render the matter still more certain, a large clear fragment was ground and polished with parallel faces, so as to admit of its being introduced in the axis of a polarizing instrument. The result was that in no position whatever could it be made to depolarize the polarized ray of light, a certain proof of its non-crystalline structure.

When the topaz-coloured fragments were boiled in nitric or sulphuric acid, their colour entirely disappeared, and the liquid being tested, was found to contain both oxides of copper and iron; the brown colouring matter seemed to be the same in nature as the brown liquid described and analyzed above, but it had penetrated the glass to a certain depth, and was not removable by boiling in plain water.

Heated before the blow-pipe, the glass underwent fusion imperfectly, and became opake from superficial efflorescence.

Finely pounded and fused with carbonate of potash for some time in a platina crucible, then dissolved out with muriatic acid, a considerable portion of silicious matter remained undissolved in a flocculent precipitate, which was separated and weighed.

The solution tested for lead and lime shewed but faint traces of the latter, so that the artificial glass was composed principally of silicated alkali. It was not thought necessary to pursue the analysis farther.

From the preceding rough analysis it is clear that the fragments are of a vitreous nature, and it seems probable that pieces of glass were fraudulently introduced into the cylinder, in lieu of some precious stones, which the pious founder may have intended to deposit with the other contents of the monument.

It remains to offer a few remarks upon the *nature* of these curious monuments, of which two opposite theories seem to have been broached. The opinion of the inhabitants of the country, as reported by all our observers, is, that they are the tombs of ancient kings:—that of Professor

Wilson, Mr. Hodgson, and other orientalists, that they are *Déhgopes* or *Bauddha* mausolea, containing relics of, or offerings to Buddha or Shákya.

These two theories however may, I think, be reconciled in a very simple manner.

Are not *déhgopes*, or *chaityas*, in many instances at least, shrines built over the remains of persons of the Bauddha faith, and consecrated to their saint? If so, we have but to suppose the rulers of the Panjáb, at the period of the erection of the topes before us, to have been of this religion, and the desired amalgamation of opinions is effected. My friend M. Csoma de Körös, in reply to my interrogation on the subject, expressly treats them as mausolea of the dead, and thus describes the objects contained in the modern déhgopes of Tibet:

"The ashes of the burnt bones of the deceased person being mixed with clay, and with some other things, (sometimes with powdered jewels or other precious things,) worked into a sort of dough, being put into moulds, are formed into little images, called རྟེན་, *tsha, tsha*, and then deposited in small pyramidal buildings, or shrines, (S. *Chaitya*, Tib. *m*chhod-*r*ten, མཆོད་རྟེན vulg. *Chorten*,) without any great ceremony, and without any thing precious in addition."

Such being the custom with the remains of ordinary persons at the present day, we can easily conceive that the quality of the caskets intended to contain the ashes of princes or priests in the flourishing era of their faith, would be of a superior description, and that coins and other precious substances would in some instances be added. In the Mánikyála cylinder, the pounded gritty substance contained in the brown paste was evidently such as M. Csoma describes: the larger fragments of glass were, as before surmised, substitutes for precious stones, and the brown paste itself is to all appearance compounded of various vegetable matters now decomposed and carbonized, mixed up with a portion of the ashes of the deceased, as evinced from the presence of ammonia and phosphate of lime.

There is much similarity between these mounds, sometimes of masonry and sometimes of rough stones and earth, and the remains described by Mr. J. Babington, under the name of *Pandor Kulis*, in the third volume of the Bombay Transactions. Those erections are also of two kinds: one a mere enclosure of stones, surmounted by a circular stone of an umbrella-shape, and thence called a *Topi Kul*; the other, formed of a pit below the surface, in which a large jar is placed: the mouth of the pit being covered over with a large circular stone, the earth and grass of which give it the appearance of a tumulus or barrow: this species is denominated *Kodey Kul*, and it always contains human bones in a more

or less perfect state, besides urns, arms, implements, and beads of various shapes, colours, and materials*. Mr. Wilson attributes these monuments to a very ancient Hindu practice of collecting and burying the ashes and bones of their dead, in places where no sacred stream was at hand, into which they might be committed. He quotes in support of this hypothesis, the following passage from Mr. H. T. Colebrooke's Essay on the Funeral Ceremonies of the Hindus, in the seventh volume of the Asiatic Researches.

"Using a branch of *Sami*, and another of *Palasa*, instead of tongs, the son or the nearest relation first draws out from the ashes the bones of the head, and afterwards the other bones successively, sprinkles them with perfumed liquids, and with clarified butter, made of cow's milk, and puts them into a casket made of the leaves of the *Palasa*. This he places in a new earthen vessel, covers it with a lid, and ties it up with thread. Choosing some clear spot, where encroachments of the river are not to be apprehended, he digs *a very deep hole*, and spreads the *Cusa* grass at the bottom of it, and over the grass a piece of yellow cloth. He places thereon *the earthen vessel* containing the bones of the deceased, covers it with a lump of mud, moss, and thorns, and plants a tree in the excavation, or *raises a mound of masonry*."

This is precisely the *Kodey Kul*; and the same authority helps us to an explanation of the *Topi Kul*, in which no bones are found.

"To cover the spot *where the funeral pile stood*, a tree should be planted or a *mound of masonry be raised*."

"The one," says Mr. Wilson, "commemorates the cremation, and is consequently nothing more than a pile of stones: the other inurns the ashes of the dead, and consequently contains the frail and crumbling reliques of mortality."

The curious circumstance noticed by M. Court of the eight coins symmetrically arranged around the central casket, calls to mind that part of the ceremony described in the passage immediately preceding the foregoing extract from Mr. Colebrooke's Essay.

"The son or nearest relation repairs to the cemetery, carrying eight vessels filled with various flowers, roots, and similar things. He walks round the enclosure containing the funeral pile, with his right side towards it, successively depositing at the four gates or entrances of it, beginning with the north gate, two vessels containing each eight different things, with this prayer, "May the adorable and eternal gods, who are present in the cemetery, accept from us this eight-fold unperishable oblation: may they convey the deceased to pleasing and eternal abodes, and grant to us life, health, and perfect ease. This eight-fold oblation is offered to Siva and other deities: salutation to them†."

Although the foregoing extracts refer to the ceremonial of the orthodox Hindus, they may probably represent the general features also of a Bauddha funeral; for the Buddhists agree with them in burning their dead; and in afterwards consigning the ashes and bones to some

* Oriental Magazine, vol. i. page 25. † As. Res. vii. 255.

durable mausoleum. Dr. HAMILTON informs us that the remains of priests in Ava, after cremation, are preserved in monuments*, and Mr. DUNCAN describes a marble urn dug up among the Buddhist ruins at Sarnáth, near Benares, which contain "a few human bones, together with some decayed pearls, gold leaves, and other jewels of no value," just of the same nature as those discovered in the Panjáb. There was also a similar precaution of enclosing the more precious urn in one of coarser material, (in this case of stone,) in order more effectually to insure its preservation. That the bones at Sarnáth, belonged to a votary of Buddha was confirmed by a small image of Buddha discovered close by, and by the purport of the inscription accompanying it†.

From consideration of these circumstances, therefore, in conjunction with the decided opinion of all those who have recently been engaged in the examination of the Panjáb and Kabul topes, the hypothesis of their being the consecrated tombs of a race of princes, or of persons of distinction, rather than mere shrines erected as objects of worship, or for the deposit of some holy relic, seems both natural and probable; or rather the two objects, of a memorial to the dead, and honor to the deity, seem to have been combined in the meritorious erection of these curious monuments.

I cannot omit noticing in this place, one of those singular coincidences which often serve to throw light upon one's studies. While our enterprizing friends have been engaged in opening the ancient topes of Upper India, the antiquaries of England have been at work at some ancient Roman tumuli or barrows in Essex. Without intending to draw any conclusions from the facts elicited in the course of their labours, it is impossible to read the pages of the Archæologia (1834, vol. xxv.) without being struck with the similarity of customs prevailing in such distant localities, pointing as they do towards a confirmation of the many other proofs of the identity of origin of the Roman and the Hindu systems.

The sepulchral tumuli of Essex contained, like those of the Panjáb, various bronze urns, enclosing fragments of burned bones, glass, coins, and even the brown liquid itself! The liquid is described as being in some cases "of a light yellow, in others of a dark-brown," of which colour was also an incrustation about the exterior of the vessels. Professor FARADAY, who examined the liquids, supposes that the water was

* Trans. Roy. As. Soc. vol. ii. p. 46.

† The square chamber without door or other opening discovered in digging the ruins at *Buddha Gaya*, and supposed by Dr. HAMILTON to be a tomb, resembles the square ornamented chamber penetrated by Dr. GERARD near Kábul, where he found the image of Buddha, described at page 455 of the present volume.

not originally placed in the urns ; but that it came over by a species of distillation into the empty space of the vases, on the alternate heating and cooling of the air contained in them. The researches of M. M. Ventura and Court may give reasons for thinking the contrary.

" The deposit on the side of the large vase was a dry flea-brown powder, containing a few white specks. It was combustible with a very feeble flame, burning like ill-made tinder or charred matter. It left a little pale light ash, containing carbonated alkali, carbonate of lime, and a little insoluble earth. This substance gave *no trace of ammonia by heat*. It is probably the result left upon the decay of organic matter, but of what nature, or in what situation that may have been, I cannot say.

"The liquor was a dilute solution of the same kind of matter, (4.2 grains to a fluid ounce :) this when dried and heated, did yield a little ammonia ; it blackened, but did not burn visibly."

"A third bottle was found to contain a fatty substance like stearic acid, melting under 212°, burning with a bright flame, and leaving little ash. It was dark-brown on the exterior, and yellowish and semi-transparent in the middle : the brown coloring matter was separated by dissolving the fat in alcohol—it was supposed to be the residue of albuminous or gelatinous matter, but it yielded no trace of ammonia."

Mr. Gage, the author of the description, imagines the liquid to have been lustral water, poured in at the time of depositing the bones and funeral ashes. The pieces of fused glass adhering to the burnt bones, and the liquid, recalled to him Virgil's description of the funeral pile of Misenus.

—— Congesta cremantur
Thurea dona, dapes, fuso crateres olivo.
Postquam collapsi cineres et flamma quievit,
Reliquias vino et bibulam lavêre favillam :
Ossaque lecta cado texit Chorinæus aheno.

The dark-brown incrusted powder of the outside of the urn was in the same manner referred to a decayed wreath of yew, or other dark vegetable, depicted in the lines.

——— Cui frondibus atris
Intexunt latera et ferales ante cupressos
Constituunt. *Æneid*, vi. 215.

The offerings at funeral sacrifices among the Romans consisted of milk, wine, blood, and such other *munera* as were supposed to be grateful to the deceased :—money was usually added to defray the charges of Charon's ferry.

The reader may compare this description with the extracts from Colebrooke ; before given, and draw his own conclusions.

As the opinions of all those who have visited the countries where these monuments lie, are particularly deserving of attention, I cannot

resist the temptation of extracting a paragraph concerning them from the Manuscript Journal of Mr. TREBECK, the companion of Mr. MOORCROFT, now in my hands for transmission to Europe. These travellers, it will be seen, visited the spot where Mr. MASSON has lately been so actively engaged. They procured some of the coins now so common to us, and they had received from native tradition the same account of the contents of the topes which has now been confirmed by direct examination.

"On the evening when we were encamped at Súltánpur, Mr. MOORCROFT, in the course of some inquiries learnt that there were in the neighbourhood a number of what the people called Búrjs or towers, which according to their accounts of them were exactly of the same form as that seen by us in the Khurbur country. In consequence of our stay at Bálá Bágh, we had sufficient leisure to return in search of them, and in the forenoon of the 8th, taking along with us a person in the service of Súltán Mahmud Khan, we set off towards the place where they were said to be. Our road lay between Súltánpur and the Súrkháh, and taking a guide from that village, we were conducted to the bank of the latter rivulet which we were obliged to ford. The water was so deep and rapid that a man on foot could not have got across it, and its color was quite red, from the quantity of red earth washed along by it. Having passed it, and ridden over some fields, belonging to a small Garhí, or walled hamlet, and over a piece of clayey land, much cut and broken by water-courses, we reached a narrow gravelly slope, joining at a few hundred yards, to the left, the base of the mountains bounding this side of the valley. Here we found a Búrj, but were a good deal disappointed by its appearance. It differed considerably from those we had before met with, and though certainly antique, was built much less substantially: its exterior being for the most part of small irregularly-sized slate, connected without mortar. A good deal of one side of it had fallen down, and there were others before us; we did not stay long to examine it. We counted several whilst proceeding, the number of them amounting, as well as I can recollect, to 11, and seeing one more to the westward, and better than the rest, we advanced towards it. It was situated on a stony eminence at the base of the hills near where the main river of Kábul issues from behind them, and nearly on a line with the garden of Chahar Bagh.

"We ascended to it, and found it to be of about the same size as the one near Lalla Bagh, but as just observed of a different form. It was in a more perfect state than any of the rest in the same vicinity, but varied little from them either in style or figure. It was built upon a square structure, which was ornamented by pilasters with simple basements; but with rather curious capitals. Were it a tomb, one might suppose the centre of the latter coarsely to represent a skull supported by two bones, placed side by side, and upright, or rather a bolster or half cylinder with its lower part divided into two. On each side of this were two large pointed leaves, and the whole supported two slabs, of which the lower was smaller than the upper one. The most curious circumstance in this ornamental work was, that though it had considerable effect, it was constructed of small pieces of thin slate, cleverly disposed, and had more the appearance of the substitute of an able architect, who was pressed for time, and had a scarcity of

material, than the work of one who had abundance of the latter, plenty of leisure, and a number of workmen at command. A flight of steps had formerly led up the southern side of this platform, but nothing remained of them except a projecting heap of ruins. On the centre of the platform was the principal building, called by the country people the Búrj, the sides of which had been erected on a perpendicular to half its present height. This lower portion of it was headed by a cornice, and was greater in diameter than the upper part of the structure, its top forming a sort of shelf round the base of the latter. Its centre was marked by a semicircular moulding, and the space between the moulding and the cornice was ornamented by a band of superficial niches, like false windows, in miniature, arched to a point at the top, and only separated by the imitation of a pillar formed as before noticed of slate. The upper part of the tower was a little curved inwards, or conical above, but a great deal of its top had fallen off. The effect given to its exterior by a disposition of material was rather curious. From a distance it seemed checked a good deal like a chess-board—an appearance occasioned by moderately larged-sized pieces of *quartz*, or stone of a whitish color, being imbedded in rows at regular distances in the thin brown slate before spoken of. I had just time, though hurried, to take an outline of its formation on a piece of drawing-paper.

"The use of these erections next became a matter of speculation, and Mr. Moorcroft, having heard that coins were frequently picked up in various places near them, instructed a man the day after our return to proceed to the neighbourhood of them, and try if some ancient pieces of money were not to be found. The inhabitants of the Ummur Khail, a small village near them, said, that they learnt from tradition that there had formerly been a large city in this part of the valley, and pointed to some excavations across the Kábul river, which they told us had been a part of it. Of the coins they stated that several had been found of *copper*, but as they were of no value to them, they had been taken to some of the nearest bunneahs or shop-keepers, and exchanged for common pice. This information gave a clue to the person in search of them, and he succeeded at two or three visits to some Hindus of Chahar Bagh, Súltánpur, &c. in procuring several. He was also sent back to Jelálábád, but brought with him from thence only two pieces of Russian money, which were useless. The former were however very valuable and curious, and had on each side of them for the most part impressions of human figures; but from the frequency with which they were combined with representations of the elephant and the bull, it may by conjectured that they were struck at the command of a monarch of the Hindu, or Buddhist persuasion. The variety was considerable, and there were certainly two or three kinds which might have been Grecian, particularly one that had upon one side of it a bust, with the right arm and hand raised before the face with an authoritative air. Of this coin there were eight or ten, they were of about the same size as English farthings, and the figure spoken of was executed with a correctness and freedom of the style foreign to Asia, at least in the latter ages. The rust upon them, and the decayed state of the surfaces of two or three, as well as the situation in which they were found proved, that they were not modern. There were several more of the same size, merely with inscriptions in letters not unlike Sanscrit; and some other inscriptions, on the larger pieces of money, were so legible that a person, acquainted with oriental letters and antiquities, might discover much from them. With regard to the Búrjs, or buildings previously mentioned, Mr.

Moorcroft's opinion is probably correct. He conjectures that they are the tombs of some persons of great rank, among the ancient inhabitants or aborigines of the country; and as the religion of the Hindus seems to have been prevalent here in the earliest ages, that they have been erected, as records of the sacrifices of Sattís. But the question cannot be satisfactorily set at rest till one of them is opened. It is odd, that they should have escaped destruction, situated as they are in the full front of Musulman bigotry, and avarice; and, notwithstanding what some individuals assert, their present decayed state seems to be occasioned by age, rather than any attempt to discover whether they contain any thing valuable. A few people say that one of them was opened, and that a small hollow place was covered near its base, in which there were some ashes as of the human body."

VI.—*Journal of a Tour through Georgia, Persia, and Mesopotamia. By Capt.* R. Mignan, *Bombay European Regt., F. L. S. and M. R. A. S.*

[Continued from p. 463.]

On the 24th we started early in the morning for Tabríz. The weather continued so very cold, that whatever was moistened by the breath, immediately became ice. Our mustachios were distended into an icicle. During the early part of our march we had some slight deserts, and afterwards entered a pass surrounded by wild and barren mountains. From an elevated spot we observed the river Augi flowing through a deep valley below, which we shortly after crossed upon a stone bridge of three arches. We found the water of this stream extremely brackish; indeed, the soil of this region is so salt, that all the streams partake of that quality. At the side of our road we observed immense masses of rock, the surface of which appeared to have been worn by the action of water. Indeed, the whole tract wore the appearance of having been recently abandoned by the ocean, and formed one irregular broken waste which might be compared to the waves of the sea, changed into earth, at the heat of the agitation. The latter part of our journey was unusually rugged, and although I have seen much mountainous scenery, I can remember none that exceeded in difficulty the passes of Karadágh.

Nothing can be imagined less like the environs of a capital city than the aspect of the country on every side of Tabríz. For several miles, the traveller passes over a plain which exhibits little but sterility and abandonment. The gardens which at first resemble black spots on the desert, are all that direct the attention to the celebrated capital of Azerbiján. It looks like some older city, long deserted by man. The appearance of its mud walls, arising out of, and surrounded by ruins; the prison-like houses which seldom exceed one story, without a decent looking win-

dow to enliven them; the inelegantly shaped domes, without a single Turkish minaret to relieve them; all exhibit a most monotonous effect, and combine in a general *coup d'œil* to impress the traveller with a very mean opinion of Persian architecture.

Tabríz, or as it is generally called by foreigners, Tauris, is the Ganzaka of antiquity. It is situated in the province of Azerbiján, which in former times was called Atropatia, from ATROPATES the satrap, who, after the death of ALEXANDER, assumed the title of sovereign of the country, and transmitted it to his posterity, who retained the government for several centuries. It is asserted by some, that in the fourth century of our æra, a treaty was concluded between NARSUS king of Persia, and the Emperor GALERIUS; by which contract TIRIDATES became its governor, and enlarged the city in emulation of the magnificence of Ecbatana. Yet we find that subsequent to this, it suffered various revolutions; for when HERACLIUS entered its gates, there were only three hundred houses standing. On the accession of the Sefi race however, Tabríz regained its old importance. Sir JOHN CHARDIN mentions, that in his time the city contained half a million of souls. "J'ai fait beaucoup de diligence pour apprendre a combien se monte le nombre des habitans de Tauris; je ne pouvais pourtant pas le savoir au juste: mais je pense qu'on peut dire sûrement qu'il va à 550 mille personnes." *(Chardin, Voyage de Paris à Ispahan, p.* 184.) But the earthquake of 1727, so greatly diminished its population, that only seventy thousand remained, and after the succeeding shock in 1787, there were only forty thousand inhabitants. If CHARDIN be correct, how dreadfully scourged this province must have been in the short space of forty-one years. Such were the awful changes of power and population, during the last century.

Tabríz is surrounded with a wall, and protected by a deep ditch which embraces a circumference of three miles and a half. The suburbs which have been built from ruins dug on the spot, occupy the ground which once composed the old city. To the north and east they extend for several miles, and so great is the mass of ruin about the plain in this direction, that I am convinced, the most violent shocks were experienced at some distance from the new city. Two hundred and fifty mosques are mentioned by CHARDIN, out of which the remains of three only are to be traced. The finest of these is, that of Alí Koja, erected by him six hundred years ago. It is still nearly one hundred feet in height, and commands a fine view of the surrounding country. Some time ago, a woman was thrown from its summit, for having murdered her husband. About two miles to the south-west of the city, the ruins of Sultan KAZAN's sepulchre are to be seen. The remains of decayed

buildings are here most enormous. The appearance of the sepulchre is that of an elevated mound composed of the usual *debris*—bricks, lime, stones, and tiles. It is encircled by several arches, and other vestiges of departed grandeur.

The court of Abbás Mirzá, Prince Royal of Persia, is held at Tabríz. Of the fifty-five sons* of Fatteh Alí Sháh, he is the only one who ever made an attempt to raise a regular army, which continued in an efficient state, until the conclusion of the peace with Russia. At present, the Government cannot see the utility of entertaining men who are not absolutely required, and have in consequence disbanded nearly the whole army, retaining only a few Russian deserters. The serviceable part of the establishment however, consists of three British officers, (Capt. Shee, and Lieutenants Burgess and Christian,) and eight sergeants, all of whom are under the immediate command of Major Isaac Hart, of His Majesty's 65th regiment of foot, an officer of the highest military talent, and determined bravery, who deserves far greater praise than I am capable of bestowing. Notwithstanding the insuperable difficulties this indefatigable officer has encountered, he has single-handed, organized, and held together all the prince's troops, and for the last sixteen years, the name of Hart has been the admiration of every soldier in the Russian army on the frontier. The artillery have always been the most efficient part of Abbás Mirzá's army, and the infantry scattered throughout the districts. The amount of the general disciplined force under the command of Major Hart, which might be collected, is about 10,000. Previous to the late war, fifteen battalions, each 1000 strong, were regularly clothed and fed by His Royal Highness, together with nearly 10,000 irregulars, or *Túffangchís:* these are foot soldiers, armed with matchlocks, who were only nominally ready at a call, being dispersed among their own villages. As these men received little or no pay, it cannot create surprise, their never evincing great readiness for field service, or much firmness in action; especially when their wives and children were left during their absence totally unprovided with even the common necessaries of life.

The introduction of English discipline in Persia, would long since have been superceded by Russian, had it not been for the unceasing exertions of Major Hart; and when we remember the avaricious habits, and the horrid depravity, into which Abbás Mirzá has lately

* The family of His Majesty of Persia consists at present of fifty-five sons, and one hundred and twenty-five daughters. Many of his sons have fifteen and twenty children, and some of these are of an age to possess wives and husbands: so that, when the number of the king's issue is reckoned at a thousand, it will not appear incredible.

fallen, it becomes a wonder how he continues to retain any forces at all: and it may be added as a fact, that the Russian Government would give the Major any sum of money to quit the country. Count Paskewitch is so jealous of our intimacy with Persia, and so anxious to dislodge us therefrom, that he actually tendered officers to drill the troops entirely at the expense of his own employers; and had it not been for Major Hart's local power and influence, the Persians would have accepted of their services. When this officer quits Persia, the whole army must swarm with Russians, whose ambassador will not fail to gain an effectual ascendency*. Is this to be wondered at? the Prince Royal has intreated the Indian Governments to grant him officers upon their former terms; to this they would not listen, so that he must eventually accept the services of Russia. When that day arrives our influence in Persia ceases, *perhaps* for ever †.

Abbás Mirzá has been formally proclaimed heir-apparent to the crown: this has been acknowledged by the two great powers of Europe, but it is a matter of much doubt and uncertainty, whether or not any other member of the reigning family, will ever be established upon the throne. The Kajurs, or royal tribe of Persia, are detested by all classes of people, and when the present Sháh dies, it is not improbable that an attempt will be made to exterminate the whole family. According to

* Since the writer quitted Persia, he has heard with unfeigned sorrow that Major Hart is no more. He may be permitted to embrace this opportunity of indulging his feelings by a brief record of his lamented friend. The name of Isaac Hart will not be read even by a common acquaintance without awakening sentiments of the deepest regret, for the loss of so much worth. With good talents he combined an invincible perseverance, a masculine understanding, and an energy of spirit. These endowments were accompanied by qualities of greater value—a purity of principle, a generosity of spirit, and an affectionate temperament of heart, which secured him the respect and regard of every individual of his acquaintance. He was on the eve of revisiting his native country, when unhappily his health broke down. He died at Tabríz, on the 11th day of June, 1830.

† It may not be inapplicable here to remark, that much of the success of the Russians in their intercourse with Persia, where their power is gaining the asceudancy over ours, is owing chiefly to the attention they pay to the acquirement of the Persian language; for which purpose there are both at Moscow and St. Petersburgh institutions, where the young men who are destined for missions are early prepared for that service; and it is much to be regretted that no such institution in our own country places it within our power to cope with our neighbours in our relations with Muhammedan countries. The slightest reflection will convince even a common observer, that the negociations of a *chargé d'affaires* at a Muhammedan court, who communicates personally with the supreme head, is infinitely superior to those of him who is obliged to employ an interpreter, who invariably turns your negociations to his own account, or that of his highest bidder.

Olivier, this tribe is of Turkish origin. They took refuge in Persia, under the reign of Sháh Abbás I., whence they received the name of Kajurs, or fugitives.

During my stay at Tabríz, I was presented to Abbás Mirzá by his physician, Mr. Cormick, of the Madras Medical Service. We were received in the hall of audience, which on entering we found so dark after the brightness of the sun to which our eyes had been exposed on the way, that we were unable to distinguish at first the objects within. The room was long and narrow, the floor covered with a carpet, which felt extremely rough when trodden, and which was so thickly embroidered, that the primary material was completely hidden. Upon this carpet, at the corner of the room farthest from the entrance, and in the centre of the border which had no cushions, Prince Abbas Mirza reclined. The style of his dress was not different from that worn by all Persians of the higher order. He had on a pelisse of searlet cloth, lined and bordered with black sable. From his waist projected through the sable the handle of his dagger, mounted with brilliants; and on his right side lay a Damascus sabre, the blade of which seemed to be of a value little inferior to that of its scabbard, which was of gold, enamelled, and ornamented with diamonds, and other precious stones.

In appearance Abbas Mirza was about forty-five years of age; his countenance was handsome, though his features were not well-shaped. His eyes were fine, large, and of a deep black; his nose was lofty, and his look imposing, mixed, however, with an expression of ferocity. His jet eye-brows, and long bushy beard, formed so great a contrast with the paleness of his face, that I could scarcely persuade myself paint had not been used. His hands were also delicate, and on one of his fingers he wore a splendid diamond, which he often presented to view by bringing the hand into contact with his beard. He was excessively affable and polite; his manners were highly polished, and his expressions of civility wore that tinge of hyperbole, for which the natives of these countries are so remarkable. Sir Robert Ker Porter's likeness of him gave me no idea of his expression of face; but I am told he is much altered since he fell into such habits of debauchery. His conversation turned principally upon the emigration of our countrymen to New South Wales, and of its climate and productions. He was highly amused at our description of the Kangaroo, and would not be persuaded that they were fit for *kabobs*—but, added he, "I would not hesitate in tasting of them, provided you set me the example; I then should see by your countenance, whether they were good." During the visit, Dr. Cormick turned every thing I said into an extravagant compliment to the prince, and then demanded of me if it was not what

I intended to express. Dissent was of course impossible, so I allowed him his own way. After remaining in the audience room for about half an hour, we made two low bows, and retired under the escort of the *Kaim makám*, or prime minister, who accompanied us to the outer court, where we met our horses and returned home.

Not long ago, the Governor of Bombay, Sir JOHN MALCOLM, sent Prince ABBÁS MIRZÁ a very handsome London-built stanhope, which he sported about the suburbs of the city, and issued a proclamation that his ministers should forthwith provide themselves with similar equipages. The nature of the country is so good, that carriages might drive over it with nearly as much safety as upon a turnpike road. Persia is well adapted for carriages, and with very little trouble good roads might be made, except through the defiles from one plain to another, where the ruggedness of the mountain passes present serious difficulties. This was the case when wheeled-carriages were in use; for DARIUS after the battle of Issus, kept to his car as long as he was in the plain; but was obliged to alight from it, and mount his horse when he came to the mountains. It would have been well, if His Royal Highness had followed this prudent example upon his late hunting pic-nic; for on his attempting to ascend the mountains in his stanhope, the vehicle overturned, and was smashed to pieces, and the Prince had his head nearly broken. I was told that His Highness had chosen the fittest spot for such an achievement. Since this accident, he has quite forgotten to see his orders enforced either in building carriages, or constructing roads. Some of the *attachés* to our embassy have *droskies*, which are drawn through the narrow streets of the town by men; after which, their ladies are seated in them, and drive over the surrounding plain.

The Prince Royal is exceedingly fond of hunting and hawking—he generally goes into Karadágh; which is, in fact, his "hunting place." Antelopes, partridges, and bustards are found there in great numbers. Such is the wonderful speed of the first-named animal, that no instance has yet occurred of their being fairly run down, except by relays of horsemen and dogs, after the manner described by XENOPHON of hunting the wild ass. He says, that the horsemen had no other means of catching them, than by dividing themselves into relays, and succeeding one another in the chase: *καὶ οἱ μὲν ὄνοι, ἐπεί τις διώκοι, προδραμόντες ἀνείστηκεσαν (πολὺ γὰρ τοῦ ἵππου θᾶττον ἔτρεχον) καὶ πάλιν ἐπεὶ πλησιαζοι ὁ ἵππος, ταυτὸν ἐποίουν· καὶ οὐκ ἦν λαβεῖν, εἰ μὴ διασταντες οἱ ἵππεις θηρῶεν διαδεχομενοι τοῖς ἵπποις.* (ANABASIS, lib. i. c. 5.) The antelope is equally common to Persia, as to Arabia, India, and Africa. It is the *δορκας*, mentioned by XENOPHON, among the wild animals which the Ten Thousand hunted on their march through Syria. The bustards are the *ὠτίδες*, for they

possess the same qualities which he describes; making short flights, and tiring very soon. (Anabasis, lib. i. c. 5.) The natives call this bird the *young antelope*. They likewise designate the ostrich by the name of a beast, calling it the *camel bird*. This appellation is apposite, for when the camel is seen on the desert from a distance, it is almost impossible to discriminate the one from the other.

I was often amused in my rambles round Tabríz, at meeting the Muhammedan ladies, who promenaded the streets, enveloped in their *chaders*. If no native was within hail, (as the sailors would say,) they invariably tossed off their veils, and in a sprightly manner expressed a desire to become better acquainted. The same forward air and manner was also displayed by the women, who often appeared at the latticed windows overlooking the road, and who manifested by their coquetry, and a peculiar laugh of the eye, the expression of delight at the attention they excited. As their faces were highly *rouged*, and their head-dresses gaily adorned, it forcibly called to my recollection, the history of Jezebel, how she *painted her face*, and *tired her head*, and *looked out at the window**. They have also a busy trifling with their veils, under the pretence of adjusting their hair; during which time they do not fail to make the best use of their large gazelle-like eyes. In speaking of the women, I shall briefly remark that they have intrigue to their fingers' ends—*à la Française*. The higher classes are extremely profligate; and when engaged in an *amour*, quit their home, wrapt in their impenetrable *chader* of one of their female slaves. There is no country on earth where the women have greater opportunities of gratifying their wicked propensities than Persia. Major Hart assured me that when the Russians were in possession of Tabríz, most of the Persian nobles fled to the adjacent towns, and left their wives and their slaves in possession of their houses—and of their liberty. These women flocked at nightfall in such numbers to the citadel, where most of the Russian officers were quartered, that the sentries were compelled to repel them with the butt ends of their firelocks, or they would have been completely overpowered by the violent passions of these females. On their admission to the officers, who thought that fear had driven them for protection, they confirmed by expressive looks, and attractive gestures, that the object of their visit was by no means equivocal. I could illustrate this with many facts, but the present one will, I think, be sufficient to show that the Persians have some cause for *padlocking*

* "And when Jehu was come to Jezreel, Jezebel heard of it; and she painted her face, and tired her head, and looked out at the window."—2 Kings, xi. chap. 30th verse.

their women. Indeed, the feelings which they have towards them is well expressed in the word "Zaifah," which we should translate into frailty, or weakness. Shakspeare's celebrated apothegm in Hamlet, "Frailty, thy name is woman," is highly characteristic of the Persian ladies.

Before finally quitting Tabríz, I may observe, that during the time of my stay, the weather was in general temperate. The thermometer in the shade ranged from 41° to 51°. The air was kept so constantly loaded with moisture by the melting of the snow, that LESLIE's hygrometer never sunk below 50° in the shade; but when exposed to the sun, it sometimes rose to 95°. The sky was for the most part clear, and the air both keen and bracing.

We quitted Tabríz on the 31st of March, at the hour when the once-worshipped god of the Persians was lifting his glorious forehead over the heights of the city, and from every mosque the Mussulmans' loud voice called on all true-believers to rise to their orisons. Our first stage was made to the village of KHOSRU-SHA'H, distant about four farsangs, or sixteen miles, and seated in the fertile and lovely valley of Uz-Kon. On our route we passed the village of Sardery, which presents itself from an eminence, and occupies the base of a hill, upon the summit of which are the ruins of a fort. From this spot I took some geographical bearings. The city we had left, and the over-hanging mountains were on our right, while the peninsula of Sháhí was on the left. The bed of the salt stream which we crossed previous to our arrival at Tabríz pursued its tranquil course through the plain, from the gorge of the mountains, whence it escapes, to the head of the lake Ourumia, where it discharges itself, and is lost altogether. The disposition of the surrounding plain would lead to the idea, that the lake once extended over it, and such is the delusive effect of the mirage, which plays over its saline surface, that it is very difficult to believe what one sees is vapour and not water. This optical deception has been noticed from the remotest times. It is alluded to by the prophet Isaiah, when he says, "And the parched ground shall become a pool." (Chap. xxxv. v. 2.) And again, "I will make the wilderness a pool of water." (Chap. xli. v. 18.) QUINTUS CURTIUS, in describing ALEXANDER's march through the Sogdian desert, says, that "the plains wore the appearance of a vast and deep sea," (QUIN. CUR. lib. vii. chap. 5,) which is a true and perfect description of the mirage of the Persian and Arabian deserts. Bishop LOWTH has rendered what we read "parched ground," in our Bibles, into "glowing sand," (Isaiah, xxxvth chap. 7th verse,) which is highly expressive of this illusive appearance.—(LOWTH's Isaiah, chap. ix. page 88.)

In winding round the same range of mountains which surround Tabríz, and which are a ramification of the Sahand branch, we observed innumerable villages, embosomed amongst trees, while the snow-capt heights of the Sahand mountains rose above the valley, and gave the whole a most picturesque effect. From this village to Dehkargám, a distance of full twenty miles, the country is a level plain, over which we saw flocks of the bustard, and several large foxes; but owing to their extreme shyness, we could not approach either sufficiently near to obtain a shot at them. Shortly before we caught the first view of the town, we could observe Lake Ourumia spreading its unruffled waters through a succession of rugged promontories, of which, a towering snow-peaked range, which fringes the horizon, forms the most magnificent feature. Dehkargám is encircled by a mud wall, and surrounded with extensive gardens and orchards. Trees were now assuming their dress, their foliage shot forth in great luxuriance, and wore a charming colouring to the landscape. This town was the head-quarters of the Russian cavalry at the time Field Marshal Paskewitch was carousing in the capital of the province. The whole district is wonderfully productive, and a beautiful foraging country.

April the 2nd.—We proceeded to Khaniah over a tract of mountain glen of about sixteen miles, destitute of the smallest symptom of habitation or culture. The very rills disappear, and the water oozes out of the rocks in springs, which no frost can congeal. Now and then a little noteless bird darted across the road, and appeared to eye us from a distance, as he balanced himself on the point of a reed. Cattle, nearly as wild-looking as deer, snuffed the wind as we neared them, and gambolled on the firm footing which they well knew among the marshes. We distinctly heard the hawk's cry as he skimmed along the rugged cliffs, and the yellow-winged earth-bee boomed round us, and with a bold hum spun away to the marshy shore of Shábí.

The hamlet of Khaniah lies upon the margin of the lake, and were it a little more elevated, would command a grand view of it. The face of the mountains which gird its western shore, wear all the appearance of a volcanic region. The rugged aspect of the Kurdistán chain, the deeply furrowed ravines on either side, the romantic forms of the jagged rocks, all prove that the surrounding country has been the scene of some convulsion of nature. A little before we entered the hamlet, we saw several chalybeate springs bubbling from the earth, and a few yards further on, some curious petrifactions are situated. These consist of several pieces of water contained within the circle of a mile, whose sluggish shallows stagnate and petrify by a slow and regular process, producing that stone which in the country is called Tabríz

marble. The water appears as if it were frozen, and when the stagnation is complete, a man may walk over it. The tendency of this water to become stone is so great, that where it exudes from the ground, the petrifaction assumes a globular shape, like the bubbles of a spring suddenly arrested in their play by a magic wand, and thus converted into marble. The stone is nearly transparent, very brittle, and often streaked with veins of various colours. Its general appearance is that of alabaster, and it is capable of receiving a fine polish. It is devoid of fissure, and may be cut into immense slabs. Rushes grow abundantly in the ground around, and the neighbourhood is both saline and marshy. This remarkable natural curiosity bears north 20 west, and is about two miles from the lake.

There are few objects more calculated to arrest the attention of the traveller than this lake, which is considered the Spauto and Marcianus of Strabo and Ptolemy, and is now called Deriáh Sháhí, the Sea of Sháhí, or the Lake of Ourumia, from a town of that name situated on its western bank. This town is the site of the ancient Thebarma. The very same extraordinary circumstance is remarked here as on the shore of the Dead Sea. There is no visible outlet to the lake, notwithstanding fourteen rivers are daily flowing into it. No increase in the height of the water is perceptible: on the contrary, signs of diminution are very apparent; so that the evaporation is greater than the body of water sent into it. There is a very close resemblance between the Lakes Asphaltes and Ourumia. No living creature is found in either; for as soon as the rivers carry down any of their fish, they instantly die and become putrid. Their waters are the same, intensely cold, and to the taste appearing like a mixture of lime, nitre, and magnesia. The indefatigable and lamented African traveller Browne, found by an experiment that this noble sheet of water contained one-third more salt than the sea. Ibn Haukel also remarks, that its waters are so exceedingly salt, no fish can exist in them; and he likewise adds, that its length is about five days' journey. The extreme length of the two seas are the same, seventy miles; but Ourumia is thrice the breadth of Asphaltes, being about thirty miles. It contains five islands and a peninsula, which are nearly untenanted, except by venomous snakes and other reptiles. Dr. Thomas Shaw, in his Travels into the Holy Land, calculates that the river Jordan daily sends into the Dead Sea six millions and ninety thousand tons of water. "So great a quantity of water," he continues, "being received without any visible increase in the limits of the Dead Sea, hath made some conjecture, that it must be absorbed by the burning sands: others, that there are some subterraneous cavities to receive it. Provided the sea should be seventy-two

miles long, and eighteen broad, and six thousand nine hundred and fourteen tons of vapour being allowed to every square mile, there will be drawn up every day above eight millions, nine hundred, and sixty thousand tons. As the heat of the sun is of more activity here than in the Mediterranean Sea, exciting thereby a greater proportion of vapour; so the Jordan may, in some measure, make up this excess by swelling more at one time than another; though, without doubt, there are other rivers, particularly from the mountains of Moab, that must continually discharge themselves into the Dead Sea*." Although none of the rivers flowing into the sea of Sháhí, are so large as the Jordan, yet collectively they cannot fail to make up an immense mass of water. It is perfectly impossible to form an estimate of the proportion of the supply to the evaporation, because all Persian rivers overflow their banks in spring, and at the end of autumn are mere rivulets.

Just as the sun was on the eve of setting, I proceeded on foot to the shore of the lake. An awful silence hung over it, but the sound of its waters slowly rolling before the wind, which blew at the time, were even more appalling than the desolation of its shores. In this solitude I felt something approaching to pleasure from the sight of a hawk, which passed over the unnavigated waters. This incident arrested the course of those feelings, which divine indignation forces upon a traveller who visits the Dead Sea, though the assertion that no birds can fly over that sea, on account of the pestiferous vapour inhaled from its surface, has received a marked contradiction by our latest travellers. I have already remarked that no fish exist within the waters of Lake Ourumia, having made particular inquiries at the village, whose inhabitants have often spread nets in vain; nor did I observe on the shore any shells whatever, or find, in truth, a solitary tree of any species. On the whole, the vast wilderness, and dreadful sterility of the same, is sufficient to impress a beholder with feelings of awe and dread. I remained about half an hour on the shore, and filled a bottle with the water. The shades of evening were approaching, the glorious lamp of night was watching, as it were, a close of day, to illuminate benighted worlds; and my village guide represented the danger of remaining longer, since a surprise might be apprehended from some of the wandering tribes, who are ever on the watch for prey. In consequence of this we returned to the village. We continued our march from hence, going south, over a barren tract of dark mountains, totally devoid of vegetation. The soil was argillaceous, and now and then the road lay over deep strata of rock, among which talc was predominant. Previously

* Vide Travels into Syria, and the Holy Land, by Dr. Thos. Shaw, F. R. S.

to leaving the flat waste surrounding Deriáh Sháhí, we gazed upon the marsh which renders Sháhí a peninsula. Far off, to the west, we saw the cloud-diadem that crowns the chain of mountains which divided the old Assyrian and Median empires, and other mountain ranges, all accustomed " to parley with the setting sun." Shortly afterwards we were hid from the lake altogether, but obtained a more expanded view as we descended from the mountains towards Ajub-shír. From hence, the lake itself appeared as in the bottom of a bowl; we could now observe all its islands, which lying in a cluster, had the appearance of a little glimmering archipelago. From this point of " various view," the wide prospect of the windings of the river that issues from the adjacent mountains was suddenly descried. Ajub-shír is a small village, situated upon one of the fourteen rivers that flow into the lake, and which takes its birth from among the Sahand mountains. It is, as well as several other villages on the plain, the property of Jáfer Kúli Khán, the opulent chief of Marágha. This man is one of the greatest land proprietors in Persia, and the bitterest scourge in Azerbiján. Although the condition of the peasant is miserable in this province, he is in general industrious, and infinitely superior in intelligence to the ryots of British India. It is impossible to conceive the life of misery, which the peasant passes under the wild caprice, and perpetual irritation of Persian tyranny—the exposure of his dearest interests to brutal passion, or malignant power; his constant fear, that the fruits of a life of labour will be sacrificed to the avarice of some insolent slave, raised into sudden authority by his superior villainy, and sent forth to live by plunder and rapine. God forbid, that the day of oppression may not have an end; that man, however defiled with the dust of slavery, may not wring the scourge from the hand of the tyrant, and clear away the stain!

We reposed at Ajub-shír a great part of the day, as all the beauty tended towards the west, each hour deepening the prospect into the mellower splendor. To keep the eye from reposing on the lake, was indeed impossible; its still waters soothed one's soul, without holding it away from the mounts and cliffs, that forming of themselves a perfect picture, are all united with the mountainous region of the west. Towards sun-set we proceeded onward, and met the shepherds driving their flocks towards the village. The husbandmen were returning home from the toils of day, and from every house the smoke ascended in an undeviating upright direction.

> " Et jam summa villarum culmina fumant,
> Majoresque cadunt altis de montibus umbræ."

We soon descried the rich town and fertile district of Bináb, which is distinguished by its extensive orchards, and its hamlets environed by trees and cultivation. From hence not only the great expanse of the lake is seen, but the full extremity of the plain to the northward. We stopt the night within the cottage of a tobacconist, and renovated our strength by smoking a choice collection of chibouques. After this we were served with two boiled fowls, lying in a small ocean of the milk of goats thickened with the whitest of rice. "Here's a dish fit for the cousin of the sun," exclaimed our host, rubbing his hands, and smacking his lips with expectation. "Bismillah," he added, as a signal for us to commence operations, and his fingers were in the dish in a moment, and in another, the tenderly boiled fowl was dissected limb by limb. "By the mouth of Muhammed, this dish is a savoury meal!" To this I perfectly agreed, for the pilau was capital; and to do the Persians justice, it must be said, they excel in this dish; in truth, Persia is the only country where it is cooked to perfection. While we were discussing the fowls, I perceived several damsels looking at us through the crevices of the harem door; and if I may judge from a few hasty glances, I should say, that my host had a good taste in women. In presenting me a kaleún, I was surprised to see him produce a bottle of wine from a curtained recess, which appeared well filled with jars; and after taking a few copious draughts, I could easily observe that he was getting fuddled, so I knocked the ashes from the top of his pipe, which he finished with as much satisfaction as if he had only begun it. He then stretched himself out on the floor, and fell asleep.

Bináb is encircled by vineyards to a considerable extent, which yield a grape celebrated throughout Persia for the good wine it produces. No one was abroad, although it was early day when we departed for Meándáb, distant twenty-five miles, over a wearisome country. After toiling over a succession of hills that separated the plains, and looking upon the country below, the eye wandered unreposed over a boundless brown expanse. The hamlets which were spread over the plain, appeared like spots upon the surface of the ocean. As we journeyed on, we saw the cultivators on the ground: their agricultural implements were of the simplest description. The plough, for instance, was formed of two wooden beams, one of which was placed athwartways, to yoke the buffaloes or oxen together, and at the extreme end, a shapeless wedge of iron was affixed to turn up the earth: thus  . About noon we reached the banks of the river Jakantú, and found a rude kind of raft constructed of beams placed across inflated sheep-skins, which was to convey us to the opposite shore. This raft closely resembled the *kellek* of Assyria, a description of which

is given in my work on Chaldæa, published in 1829, by Colburn. The stream appeared about thirty yards wide; its waters were rapid, and occasioned great difficulty, and no short time in getting the mules over. On embarking, the ferrymen pushed off the raft, and rowed it with sufficient ease, till they got into mid channel; when we were carried with the greatest rapidity along with the stream to a considerable distance. During the whole time the boatmen were shouting, "God preserve us," and one of them, who was very alert, managed to bring us to a shoal near the bank, when he leaped into the river, and contrived to stay our course, to admit of our casting the horses and mules adrift, and so lightened the boat, as to disembark us on the bank. They then re-crossed the stream, after towing the raft to a certain height, up the southern bank, and far beyond the point of embarkation on the opposite shore. Two miles below this ferry, the stream is generally fordable, as the waters have become shallow by expansion; and I was told, that in the depth of winter, it freezes so hard, as to admit large káfilahs to cross its surface, though from the apparent rapidity of its course, I should be inclined to doubt this information.

The Jakantu flows into the sea of Sháhí, and is a branch of the Kizil Uzán*, the banks of which river became the scene, a few years ago, of the mysterious murder of the celebrated traveller Browne; and although His Britannic Majesty's Ambassador, Sir Gore Ouseley, was in the country, and in fact, very close to the neighbourhood of this sad catastrophe at the time it occurred, yet (strange to relate) no resolute and determined measures were taken for the apprehension of the perpetrators. I have not the least hesitation in saying, that his Majesty of Persia was accessary to this murder; indeed, it was the current opinion in the country at the time: but unfortunately, our character was not then in very high estimation at court. Mr. Browne's ultimate object was to investigate that magnificent country, Khorasan. The present Sháh appears determined that no traveller shall have his *real* protection, if their journey is in that direction. Although Mr. Fraser has presented us with a very valuable account of some parts of it, yet his sufferings were great, his obstacles almost insurmountable, and his treatment infamous. For this our travellers have to thank

* This river is the Amardus of Ptolemy, and is supposed to have been the Gozen of Scripture. Its present appellative is descriptive of the yellow hue of its waters. Its course is both tortuous and rapid, and being augmented by several streams from the neighbourhood of the village of Banna, which is seated in the north-eastern branch of the Kurdistán mountains, it sweeps along through an Alpine country, till it enters Ghilán; where rushing onwards through a beautifully wooded country, discharges itself into the Caspian Sea, a little to the *eastward of Resht.*

their protector and friend Fatteh Ali Sha'h. His Majesty dislikes to hear of any British travellers penetrating into Khorasán, and he seldom fails to use his best endeavours to make them adorn a tale, in stead of telling one.

His Majesty is the most accomplished liar in the kingdom, (in Persia, lying is considered one of the "*most fashionable accomplishments.*") Whoever doubts the authenticity of this assertion, had better close my pages, and consult those travellers of the last, as well as the present, century; he then can judge for himself. For gain, a Persian will commit the most heinous crime under heaven, and falsehoods flow spontaneously from his lips, even when no apparent motives exist. In speaking of the Persian character, it will be found to be the natural result of the circumstances in which he is placed. A Persian is more apt to defend himself by cunning than courage, and is so dependent on the help of others, that he knows not when to trust to himself: he calls on "Khúda," when he ought to exert himself, and sheds tears when he should show spirit. He makes splendid professions when he knows his sincerity will not be tried, and is at once mean and ostentatious. In a word, his character is made up of selfishness, avarice, treachery, deceit, and cruelty. Lord Heytesbury once asked me to tell him their *real* character. My reply was this, "They surround you like the flies with the sunshine, to disappear when you are under a cloud. It is impossible to avoid their buzzing; but God help the man that does not know how to appreciate the value of their lip-deep friendship."

(*To be continued.*)

VII.—*Proceedings of the Asiatic Society.*

Wednesday Evening, the 3d December, 1834.

W. H. Macnaghten, Esq. Vice-President, in the chair.

Sir John Peter Grant, Kt., and William Grant, Esq. proposed at the last Meeting, were balloted for, and duly elected Members of the Society.

Read a letter from Henry Ashton, Esq. President of the Athenæum at Liverpool, acknowledging the receipt of the 2nd part of the 18th volume of the Asiatic Researches.

Library.

The Secretary apprized the Meeting of the arrival of the paintings, &c. presented to the Museum at the last Meeting, by Captain R. Home; he also laid the minutes of the Committee of Papers, regarding the necessary preparations requisite for their reception, which were confirmed.

The extensive library also presented by Captain Home, consisting of 300 volumes, principally of valuable works on architecture and painting, were laid out for inspection on the table.

Read a letter from Professor H. H. Wilson, enclosing statements of account with the Society's booksellers, Murray and Co., and Parbury and Co. by which it appeared that a trifling balance remained in the hands of the latter. Professor Wilson enclosed a letter from Mr. J. Murray, regarding the publication of Moorcroft's Journal, about which no definitive arrangement had as yet been concluded.

Read a letter (in Latin) from the Hungarian Society, at Pest, stating the objects of its recent institution, and desiring an interchange of publications. The first volume of the Transactions of this new Society, in the Hungarian language, with the statutes in Latin, and various miscellaneous pamphlets, were presented.

The following books were also presented.

Lea's Contributions to Geology,—*by the author.*

The Indian Journal of Medical Science, No. 12,—*by the Editors.*

Illustrations of the Botany and Natural History of the Himálayan mountains, &c. Part 3. By F. J. Royle, Esq. F. L. S. and G. S. M. R. A. S.

Meteorological Register for October, 1834—*by the Surveyor General.*

Museum and antiquities.

Read a letter from W. H. Macnaghten, Esq. presenting various weapons, consisting of a bow and arrows and two swords, richly mounted in silver and gold, used among the Coorgs.

The sword, without a scabbard, is slung in a curious belt, fitting to the middle of the back. A short knife is also worn in front with a silver chain, and paraphernalia for the matchlock. The weapons were accompanied with five native drawings, shewing the mode of exercise adopted by the Coorg troops.

Read a letter from Captain James Low, M. A. S. C., dated Province Wellesley, 16th October, announcing that he had forwarded under charge of Major Sutherland, the facsimile of an inscription on a stone slab in his possession, which was discovered by him near the ruins of an old Buddhist temple in Province Wellesley.

The inscription is stated to be in some ancient form of the *Bali*, or *Pali*, character. It is not yet arrived.

The Secretary exhibited to the members present some selected specimens from the rich collection of Gen. Ventura's coins brought down by the Chevalier Allard; to which allusion was made at the last meeting.

On a cursory examination of these coins, the following classification was readily made on account of their very excellent state of preservation. They comprise many names altogether new, and many very valuable and curious medals of pure Bactrian workmanship, along with a number of the Indo-Scythic coins, and several of the peculiar gold ones, of *Rao Nano Rao*, &c. with the inscriptions clear and distinct.

Catalogue of General Ventura's Bactrian Coins.

Of Demetrios, one beautiful small silver coin.

Of Eucratides, one large and one small ditto; and three copper.

Of Agathocles, one fine silver didrachma.

Of Philoxenos, one large silver, one square and one round copper.

Of Apollodotos, 11 small circular, and one ditto square silver coins, quite perfect; and eight copper square coins, one round ditto.

Of Menander, two small silver, and one copper square.
Of Antimachos, one small silver coin.
Of Nônos, three small silver coins.
Of Azilisos, one silver drachma, and two copper pieces.
Of Ermaios, nine copper coins.
Of Mayos, two very singular copper medals.
Of Nicephoros Antilakidos, seven small square coins.
Of Ausios, one square ditto.
Of Azos, one large and 11 small silver coins; also 66 fine copper coins of the same prince, with seven distinct devices, none having the Sovereign's head, but generally exhibiting the figures of animals.
Of Eos? (the name only well defined on a few), 22 copper coins.
Of Kadaphes Choranos, six small copper pieces.
Of Unad pherros, 23 copper coins.
Of Kadphises, large copper 18, small ditto 68 coins.

Of Kanerkos, the Raja and Mithra form, copper, ...	45
Ditto, a elephant, ...	34
Ditto, the sitting figure, leg up, ...	32
Ditto, the running figure, ...	4
Gold coins of the *Rao Nano Rao* group, ...	10
of the Kanouj group, ...	3

One silver coin of the Behut type.
Besides Arsacian, Sassanian, Cufic, and modern Persian coins, and a number of decayed and illegible coins.

Physical.

Read a letter from Lieut. W. E. Baker, Engineers, forwarding a drawing of the fossil elephant's tooth presented to him by the Nahun Raja, in whose country it was found, as mentioned in Captain Cautley's note read at the last meeting.

[This will be published in our next number.]

On the subject of fossil discoveries, the following report of further progress from Captain Cautley, dated 22d November, was read with much interest:—

"I am glad to say that Dr. Falconer's idea of the fossil remains of the larger class of animals, existing in the lower range of mountains, has at length been most satisfactorily realized!! Lieut. Baker in a late visit to a pass near the Jumna, opposite the village of Rayawalla on the *west* bank of the river, found a fragment of what appeared to me the leg bone of an elephant, but the specimen was small and much worn by weather. I crossed the river some days afterwards, and in company with Lieuts. Baker and Durand, took a careful examination of the ravine and slip near which the fragment had been found. We brought away with us a number of fossil bones, two of which were beautifully perfect; one of a leg bone of an elephant, and the other of some large animal, perhaps a camel. I write, however, in perfect ignorance of any classification, having no books of reference, and having been disappointed in my endeavours to obtain Cuvier's *Ossemens fossiles*. These fossils are found in the upper sandstone strata, in the stratum apparently superior to all the others, inclined at the angle which is usual in these hills, viz. from 20 to 35° to the horizon. Since my return to this place, I hear from Lt. Baker, that a party of work people sent by him to the Ambwalla and Tetrahindi passes, opposite Rayawalla, has returned, laden with similar fossils.

I must also tell you that in the same pass, viz. the Ambwalla, in which the first large fossil was found, Lieut. Baker discovered some thin strata of blue clay or marle full of fresh water shells, amongst which I recognise a variety of Helix, Planorbis, and an univalve; the shells are in texture and appearance similar to those found in the kankars of the plains, but very fragile and much broken. There appear to be two strata, each of about 12 inches thick, separated by the sandstone rock. The upper stratum has a superincumbent mass of sandstone of from 60 to 80 feet thick, the inclination may be about 35° to the horizon. In these interesting discoveries now going on, we have already got possession (I imagine) of *three* distinct fossil deposits, and in all probability three as distinct æras.

The 1st or lowest being that with the lignite; consisting of a clay conglomerate or coarse marle, full of remains highly impregnated with hydrate of iron, the leading ones being Saurian and Chelonian, but abounding in bones and teeth of Mammalia, fishes teeth and vertebra, and some few shells; but the latter very imperfect and much broken, probably fresh water from their thinness.

2nd.—The blue marle or clay filled with the fresh water shells above-mentioned.

3rd.—The upper or grand deposit of the remains of the larger Mammalia now found by Lieut. Baker, their remains being perfectly fossilized, and existing in abundance in the superior strata of sandstone; the general inclination of all these strata varying from 20 to 35° to the horizon.

"Nov. 25th. The parties detached to Sumrota near the Pinjore Valley, and another spot near Nahun, have brought back a great number of fossils, remains of the larger mammalia. We await your answer to decide on measures for providing the Society with specimens, unless there be objection to *separating* a collection, which will undoubtedly be of the most extensive description; for by keeping them together, there will be a greater chance of a final classification. Ignorant as I am in fossil osteology, I cannot even propose the animals to which our enormous bones belong: the teeth alone prove some of them to be *elephants*'. My friend Lt. Baker has sent you a drawing of the tooth given to him by the Nahun Rájá.—I have now a similar one brought from Sumrota—and what is rather provoking, a splendid specimen of a head, or as the Chaprassi terms it a '*Deo ka Sir*,' which was found, was carried off by a hill man of the party, who absconded, and bore off the head in triumph to the Nahun Rajá. This head has been applied for; but as it is called a *Deo ka Sir*, the Rájá may perhaps not be inclined to give it up.—There is no doubt of our finding many more, as the fossils are in abundance: all those as yet found are *Westward of the Jumna*.—I have one party in the Sewálik line, eastward of that river, on the search, and when the jungle gets burned a month hence, will have other parties in all directions.

"I have just received a letter from Lieut. Baker, mentioning *three* other places where these huge fossil bones have been found; in fact, proving that from the Jumna to the Pinjore Valley, these mountains abound in them.—I hope ere long to report on the Sewáliks, or the line between the Jumna and Ganges."

Lieut. J. S. Newbold transmitted a Memoir on the Naning territory in the Malay Peninsula, drawn up from memoranda made during a six months residence in its jungles, in 1832. The author proposes also to favor the Society with his notes made on various occasions of visits to the independent chiefs of the interior of Malacca, till lately feudatory to the decayed Malay empire of Menangcobowe in Sumatra.

Read a letter from Sergeant Dean, stating that he had despatched for the Society, a further assortment of the Jumna fossil bones, and promising a series of specimens of the Volcanic minerals from the neighbourhood of Samur lake.

Specimens of the land shells of Chili were presented by M. Durand.

Two bottles of water from the hot springs in the Mahadeo hills, and a fragment of stalactite (at first supposed to have been fossil wood) from the cave of the same name, were received from Dr. G. G. Spilsbury.

VIII.—*Miscellaneous.*

1.—*Influence of Colour on the Absorption and Exhalation of Odorous Principles.*

The *Philosophical Transactions*, for 1833, contains an account of Dr. Stark's very curious experiments on this novel subject. He had observed that when wearing a dark coloured dress he always brought away from the dissecting room an intolerable smell, which was never remarked to the same extent in light-coloured clothes. This circumstance led him to examine the subject much after the simple and successful plan of Doctor Well's experiments on dew and radiation: and indeed the results follow precisely in the same order, and shew an analogy between light, heat, and odour, in their reception and discharge by coloured substances, which may hereafter furnish an argument for the materiality of the two former.

Equal weights of black, blue, green, red, yellow, and white wool, cotton, and silk were severally and collectively exposed to an atmosphere of asafœtida, or of camphor, and were invariably found to the sense impregnated with odour in the order set down: as however no perceptible gain of weight was acquired, it was desirable to devise some means of confirming the evidence of smell.

For this purpose, a vessel of tin was prepared, in the upper part of which the several substances were freely suspended, while camphor was gently heated and volatilized from an iron plate below. Pieces of card of the same weight and size, and painted of the colours mentioned, were also employed, and the results were very uniform; thus, the gain of weight in several experiments was as follows, on an original weight of 10 grains.

	Exp. 1.	Exp. 2.	Exp. 3.	Exp. 4.	Exp. 5.
Black gained	0. 3 gr.	1. 2 gr.	——gr.	1. 0 gr.	0. 9 gr.
Dark blue	——	1. 2	——	——	0. 8
Red	0, 2	1. 0	1. 0	0. 9	——
Green	0. 25	1. 0	——	——	——
Brown	——	——	0. 9	0. 7	0. 4
Yellow	——	——	0, 5	0. 5	0. 3
White	0. 1	0. 7	0. 02	0. 4	0. 1

In all these experiments the black attracted most, the blue next; then followed the red and green; and after these the yellow and white. Dr. Stark next directed his attention to the comparative attraction of animal and vegetable substances, the results of which may be thus summed up:

	Exp. 1.	Exp. 2.	Exp. 3.	Exp. 4.
Silk gained	3,5 gr.	1,4 gr.	0,2 gr.	1,9 gr.
Wool	2,4	0,5	0,1	1,5
Cotton	2,2	0,4	0,05	1,0
Card	——	——	——	0,4

Every one must have remarked, that silk dresses imbibe a powerful odour, from which cotton ones are comparatively free:—woollen cloth appears to be intermediate. The intensity of the smell however must evidently depend on the celerity with which adours are *given out*, not imbibed: to this third point therefore the author gave his last attention, and it was satisfactory to find that the *radiation*, if it may be so termed, of odours obeyed exactly the same law as its absorption. Thus, the sets of cards, after having been exposed as above to the vapour of camphor and weighed, were left in an open apartment for 24 hours; the losses sustained were in the following ratio.

	Exp. 1.		Experiment 2.			
Black lost	1,0					
Dark-blue	1,0	absorbed.	0,9	0,03	whence the loss in equal times was	0,87
Dark-brown	0,9		0,8	0,1.		0,70
Orange red	0,8		0,6	0,2.		0,40
Yellow			0,5	0,1,		0,40
White	0,5..		0,4	0,3.		0,10

remained after 24 hours

The practical conclusions to be derived from this valuable train of observations are numerous. The use of airing clothes and linen:—the advantages of wearing light-coloured and especially white dresses in all countries where contagion is rife;—the danger of close assemblies of sombre costumes; such as courts of justice, funerals, &c.:—the advantages of white-washing walls; are all too palpable to need comment. Dr. STARK gives instances of the baneful effect of black dress in absorbing the hurtful emanations of fever patients in a public hospital: and he cites the sessions of Oxford in 1577, where the smell of the jail imbibed from the numerous prisoners caused the death of the judges and several of the black-robed counsellors. At the Old Bailey, in 1750, four judges, three or four counsel, the under sheriff, several of the jury, in all forty persons were attacked and died of jail fever, imbibed in a similar way. May it not be from an experience of the unfitness of dark dresses for hot climates that they are so seldom seen among the natives, and may not their healthiness and freedom from plague be attributable in part to this cause, as well as to the cleanliness wisely prescribed by their lawgivers? Certainly it would be highly agreeable to the temperament of Europeans in this country were some wholesome regulation promulgated, dispensing with sable habiliments under all circumstances. The offensive odour they exhale, as well as imbibe—the impossibility of washing them—their imparting a stain to other clothes, and to the body, when in a state of moisture, render them disagreeable alike to the spectator and to the wearer. The disciples of Hygeia in this country have long since lain aside their European livery, and there seems no reason why the other twain of the "three black sisters, law, physic, and divinity," should not extend the same indulgence to their votaries of the cloth and of the gown, whose occupations peculiarly expose them to the pernicious influences of bad air and crowded assemblies.

2.—*Chinese Method of making Gongs and Cymbals.*

[Extracted from the Chinese Encyclopedia called *Tian-kong-kai-we*, by STANISLAS JULIEN. Annales de Chimie, Nov. 1833.]

'Copper, for musical instruments, must be alloyed with pure mountain tin, perfectly devoid of lead. The proportion for gongs* (*lo*) is eight lbs. of copper and two

* The French word is *tam-tam*, but in India we understand by that expression a native drum.—ED.

lbs. of tin. For small bells and cymbals, the two metals must be purer than for gongs.

The gong must not be cast of the necessary form, and afterwards forged under the hammer: but first a thick disc must be cast, then cut round and forged. If large, the instrument must be laid on the ground, and four or five workmen employed to hammer it. By degrees it spreads and rises on the edges, when it begins to give out sounds like those of a musical cord from the points struck by the cold hammers.

In the centre of the plate a boss or knob is left, on which the blow is to be given:—two sorts of sound are recognised, the male and female, depending on the form and projection of the boss.

On doubling the blows of the hammer, the instrument gives out a grave tone.'

To this unsatisfactory extract M. Darcet has appended a note, of which the following is the purport.

The analysis of seven *tam-tams* and 22 Chinese cymbals confirmed the composition stated of 80 copper + 20 tin* : it contains no bismuth. This compound metal is well known to be as brittle as glass, and far from submitting to the hammer after being cast it would hardly bear the blow of a striker. Moreover it is more brittle when heated, and may then be pulverised. This alloy is also dense, the fracture a fine grain like bell-metal, whereas the gongs and cymbals are of less specific gravity, a fibrous structure, and a colour similar to that of an alloy of 90 C. + 10 T, or gun metal: they may be hammered out and bent with ease.

It is evident, therefore, that there must be some secret in the fabrication of these instruments, and this M. Darcet supposes to be the mode of tempering. In fact he finds that the alloy in question raised to a cherry-red heat, and then plunged into cold water, assumes all the properties of the tam-tam and cymbal metal:—This skilful chemist has constructed more than 60 pair of cymbals thus, and always found the simple expedient successful. The Chinese account is entirely silent as to any such treatment of the alloy.

After tempering, however, the alloy is still much too brittle to be worked under the hammer:—the Chinese workmen must therefore have deceived the author of the article; and the translator is also at fault in supposing that it is more easily forged hot.

The method followed in China is thus conjectured by M. Darcet: An exact model of the instrument required in lead or pewter is first made†, over which a mould of sand or clay is made. The alloy is fused, cast into an ingot, remelted and cast into the mould‡.

The cast is then dressed (ébarbée) and tempered like steel. The tone may be regulated by the higher or lower temper given, or by gentle blows over the surface to shape and finish it. France now rivals China in the excellence of her cymbals and *tam-tams*.

* This is also the composition of the Japanese mirrors. See Journal As. Soc. vol. i. p. 243.—Ed.

† This is a very common practice in India.—Ed.

‡ Probably the Indian mode of attaching the mould to the top of the crucible is followed, as by this means it is warmed and receives the metal freely.—Ed.

IX.—*Catalogue of Birds (systematically arranged) of the Rasorial, Grallatorial, and Natatorial Orders, observed in the Dukhun by Lieut.-Colonel* W. H. SYKES, *Bombay Army, F. L. S., F. Z. S., &c. &c.*

[Continued from p. 543.]

ORDER III. RASORES, *Ill.*

Fam. *Columbidæ*, Leach.—Genus *Ptilinopus*, Swains.

138. PTILINOPUS ELPHINSTONII. *Ptil. suprà fusco-brunneus; corpore infrà, capite, coloque cinereis; cervice nigro, plumis ad apices guttâ albâ notatis; interscapulio rubineo; collo pectoreque smaragdino, uropygio cinereo, nitentibus; remigum 2dæ, 3tiæ, 4tæ et 5tæ pogoniis externis excavatis.*

Irides ochraceo-flavæ. Longitudo *corporis* 10.3 unc., *caudæ* 5.5.

This very fine bird, forming a link between the *Pigeons* proper and *Vinago*, has quite the figure and air of *Ptilinopus porphyreus*, figured in Stephens, vol. 14. (*Columba porphyrea*, REINW., TEMM., Pl. Col. 106;) but is much larger: it is a rare bird in Dukhun, and met with only in the dense woods of the Ghauts. Not gregarious. Stony fruit found in the stomach. Sexes alike. Flight very rapid. The lateral skin of the toes is very much developed.

Genus *Columba*, Auct. *Pigeon.*

139. COLUMBA MEENA. *Col. capite, collo, interscapulio, gastræoque saturatè vinaceis, rostro flavior; crisso, caudæque tegminibus inferioribus apiceque albis; tergo uropygioque ardosiaceis; tegminibus caudæ superioribus ad apices vinaceis; scapularibus alarumque tegminibus nigris, castaneo latè marginatis; remigibus caudâque fusco-brunneis, illis castaneo marginatis; tegminibus alarum inferioribus cinereis; collo utrinque nigro maculato, plumis cærulescenti-albido ad apices marginatis.*

Fœm. *Crisso dilutè vinaceo; tegminibus caudæ inferioribus pallidè cinereis; rectricibus 4 intermediis albo haud terminatis.*

Irides aurantiacæ. *Rostrum pedesque* flavescentes. Longitudo *corporis* 8 unc. *caudæ* 5.2.

Brown and Chestnut Dove. Hhulgah of the Mahrattas.

This species might be mistaken for the European *Col. Turtur*, but on comparison, is found to differ in the whole head, neck, shoulders, breast, and belly, being richer vinaceous; in the back and rump being ash, and vent and under tail-coverts in the female light cinereous; in the four upper tail-feathers in the female being red brown without white tips; in the upper tail-coverts being tipped with faint chestnut; in the forehead and chin not being dull white; in orange *irides* instead of yellow; and finally in its greater size. Gregarious. Found only in the woods of the Ghauts. Webs of 2nd and 3rd quills narrowed as in the *Ptilinopus*.

140. *Columba tigrina*, Temm., Pig. Pl. 43. *Surat Turtle.*

M. TEMMINCK's figure does not sufficiently develope the dove-coloured or ochrey tips to the feathers of the back and wing-coverts, and the tips of the centre feathers of the tail are coloured reddish instead of being white. A remarkable feature in this bird is unnoticed in the description of it, namely, the elongated and subulated tail; unlike the last or most other species of *Dove*, instead of widening towards the tip, it is widest at the base when closed, and gradually narrows to the extremity; in fact, each feather is subulate. *Irides* lake colour or pinkish red. Sexes exactly alike. Found on the skirts of the woods in the Ghauts. Length, inclusive of tail, 12 inches: tail, 5 inches.

141. *Columba humilis*, Temm., Pl. Col. 258 et 259. *Columbe terrestre.*

M. TEMMINCK says that this bird "vit habituellement à terre," but from long observation, Colonel SYKES can testify that this supposed habit is no more characteristic of this species than of any other *Dove* in his possession. Gregarious. Not an inhabitant of the woods, but affecting mango-tree groves in the neighbourhood of cultivation. Length, inclusive of tail, 9.4 inches; tail 3.4. Tail, as in the last species, narrower at the extremity than at the base when closed.

142. *Columba risoria*, Linn. *La Tourterelle à collier du Sénégal*, Buff. Ois. 2, 550 and 553. pl. 26. Pl. Enl. 161 & 244. Le Vail., Ois, d'Afr. 6. pl. 268.

Length, inclusive of tail, 13.5 inches: tail 5 inches. Gregarious, and common in the open country. Sexes alike. In spite of the proverbial gentleness of the Dove, Colonel SYKES has seen these birds fighting with the most inveterate hostility; seizing each other by the bill, and rolling upon the ground together. Outer webs of 2nd, 3rd, and 4th quillfeathers hollowed.

143. *Columba Cambayensis*, Lath. Ind. Orn. 2. sp. 56. Temm., Pig. pl. 45.

Colonel SYKES's bird is identical with the species figured in M. TEMMINCK's plate, but it does not correspond with the description of the *Col. Cambayensis* of SHAW, vol. ii. p. 79. This species is distinguished from all other *Doves* with which

Colonel Sykes has met, by the square red spots on the black patches on the side of the neck. Sexes alike. Frequents gardens and stable-yards. Length inclusive of tail, 11.8 inches: tail 5.5 inches.

144. *Columba Œnas*, Linn. *Stock Pigeon. Parwa* of the Mahrattas.

The most common bird in the Dukhun, congregating in flocks of scores, and a constant inhabitant of every old dilapidated building. Colonel Sykes saw the same species on board ship on the voyage to England, brought from China. *Irides*, orange. Sexes alike. Length, inclusive of tail, 14.3 inches: tail 4.3 inches.

The Dukhun bird differs from the European species in the bill being black instead of pale red, in the utter want of white or black in the quills, the want of white in the tail-feathers, and in the legs being brown instead of black. As these differences are permanent, they might justify a specific name being applied to the *Dukhun Pigeon*.

Fam. *Phasianidæ*, Vigors.—Genus *Meleagris*, Linn. *Turkey.*

145. *Meleagris Gallopavo*, Linn.

The *Turkey* is met with only in the domestic state: it is reared in great numbers by the Portuguese.

Genus *Pavo*, Auct.

146. *Pavo cristatus*, Linn. *Pea-fowl. Mohr* of the Mahrattas.

The wild *Pea-fowl* is abundant in the dense woods of the Ghauts: it is readily domesticated, and many Hindoo temples in the Dukhun have considerable flocks of them. On a comparison with the bird as domesticated in Europe, the latter is found, both male and female, to be absolutely identical with the wild bird of India. *Irides*, intense red brown.

Genus *Gallus*, Briss.

147. *Gallus giganteus*, Temm., Gall, Ind. 633.

Known by the name of the *Kulm Cock* by Europeans in India. Met with only as a domestic bird; and Colonel Sykes has reason to believe that it is not a native of India, but has been introduced by the Mussulmans from Sumatra or Java. The *iris* of the real game bird should be whitish, or straw-yellow. Colonel Sykes landed two cocks and a hen in England in June, 1831: they bore the winter well. The hen laid freely, and has reared two broods of chickens. The cock has not the shrill clear pipe of the domestic bird, and his scale of notes appears more limited. A cock in the possession of Colonel Sykes stood 26 inches high to the crown of the head, but they attain a greater height. Length from the tip of the bill to the insertion of the tail 23 inches. Hen, one third smaller than the male. Shaw very justly describes the habit of the cock, of resting, when tired, on the first joint of the leg.

148. *Gallus Sonneratii*, Temm. Gall. Ind. 659. *Jungle Cock. Rahn Komrah* of the Mahrattas.

Very abundant in the woods of the western Ghauts, where there are either two species or two very strongly marked varieties. In the valleys at 2000 feet above the sea, *Sonnerat's* species is found, slender, standing high on the legs, and with the yellow cartilaginous spots on the feathers even in the female. In the belts of wood on the sides of the mountains, at 4000 feet above the sea, there is a short-legged variety; the male has a great deal of red in his plumage, which *Sonnerat's* has not; the female is of a reddish brown colour, and is without cartilaginous spots at all: in fact, the female of this variety is the *Gall. Stanleyii* of Mr. Gray's 'Illustrations.' Eggs exactly like those of the domestic fowl in form and colour, but less in size. The wild hen would appear to sit on a much smaller number of eggs than the domestic, as Colonel Sykes shot a hen upon her nest in which were only three eggs, and the process of incubation had evidently commenced some days. In the craw and stomach of many birds nothing whatever was found, excepting the seeds of a stone-like hardness called *Job's tears (Coix barbata.) Irides*, brownish deep orange. The crow or call of this species is like that of the *Bantam Cock*.

149. *Gallus domesticus*, Ray. *Phasianus Gallus cristatus*, Linn.

The *domestic fowl* is so abundant in the Dukhun, that in parts of the country not much frequented by Europeans, Colonel Sykes has bought from eight to twelve full-grown fowls for two shillings. Many of the hens, particularly of the villages in the Ghauts, are not to be distinguished from the wild bird; excepting only in the want of the cartilaginous spot on the wing-coverts.

150. *Gallus Morio*, Temm., Gall. Ind. 660. Briss., Orn. 1. 174.

This supposed species very frequently occurs accidentally in the Dukhun. Although unsightly, the black fowl is very sweet eating.

151. *Gallus crispus*, Temm., Gall. Ind. 661. Briss. Orn. 1. 173. pl. 17.

Occurs accidentally like the last variety.

Genus *Numida*, Linn. *Pintado.*

152. *Numida Meleagris*, Linn. *Guinea Fowl.*

Met with only in the domestic state, and bred almost exclusively by European gentlemen. Thrives as well as in its native country.

Fam. *Tetraonidæ*, Leach.—Genus *Coturnix*, Cuv.

153. *Coturnix dactylisonans*, Temm., Gall. Ind. 740. *Tetrao Coturnix*, Linn., Syst. Nat. 1. 278, 20. *Lohah* of the Mahrattas. *Large Grey Quail.*

Rare in the Dukhun, and found only in pairs in tufts of grass near water-courses and ponds. Resembles the *Quail* of Europe in size and plumage: the *irides* are dusky red or reddish brown, like those of the European bird, which by mistake are described in SHAW as yellow. Female a little larger than male: one female measured 8 inches, inclusive of tail of 2 inches, but this was a large bird. Period of incubation in the monsoon.

154. *Coturnix textilis*, Steph., 11. 365. *Perdix textilis*, Temm., Pl. 35. *Perdix Coromandelica*, Lath., Ind. Orn. 2. 654. 38. *Black speckled-breasted Quail.*

Irides, dusky red. Length 6.1 inches, inclusive of tail of 1.5 inch. In pairs in the monsoon; gregarious the rest of the year. Very abundant in *Joncaree* fields, *(Andropogon Sorghum.)*

155. COTURNIX ARGOONDAH. *Col. suprà rufescenti-brunnea, fasciis angustis dilutè ferrugineis notata; infrà sordidè alba, fasciis equidistantibus nigris; fronte menloque ferrugineis; strigâ superciliari rufescenti-albidâ.*

Fœm. *Fasciis magis obscuris.*

Irides fusco-rubræ. *Rostrum* nigrum. Longitudo *corporis* 5 *unc.*, *caudæ* 1.5.

Always gregarious; frequenting only rocky places, or amidst low bushes. The covey rises with a startling whirl. Flight very short. Pugnacious, and used by the natives for combat.

156. COTURNIX PENTAH. *Col. suprà saturatè brunnea: infrà rufescenti-albidâ nigro fasciula; ventre crissoque albido-ferrugineis; interscapullio scapularibusque nigro maculatis, plumarum rhachibus dilutè flavis; remigibus brunneis pallidè ferrugineo maculatis; strigâ superciliari sordidè albâ; mento rufescente.*

Fœm. *Infrà rufescens, haud fasciata; plumarum rhachibus ulbis.*

Irides ochraceo-brunneæ. *Rostrum* rufescenti-brunneum. *Pedes* flavescentes. Longitudo *corporis* 5.3 unc., *caudæ* 1.7.

Has the habits and somewhat the appearance of the last species, but is found only on the most elevated table-lands and slopes of the mountains, amidst reeds and grass. Colonel SYKES's specimens were shot at 4000 feet above the sea.

157. COTURNIX ERYTHRORHYNCHA. *Col. suprà saturatè brunnea, infrà dilutè castaneu, nigra (præter ventrem medium) undequaque guttata maculataque, scapularium maculis maximis, pectoris guttis minimis; scapularium tegminumque alarum superiorum albo fasciatarum rhachibus albis, crucem efformantibus; remigum pogoniis externis rufescenti faciatis maculatisque; fronte nigro; strigâ frontali utrinque suprà oculum productâ guláque albis.*

Fœm. *Fronte, strigâ inde ad utrumque lulus ductâ, guláque dilutè castaneis.*

Irides obscurè flavo-ochraceæ. *Rostrum* rubrum. Longitudo *corporis* 5 unc., *caudæ* 1.5.

Colonel SYKES has found this very handsome bird only in the valley of Karleh, where it frequents the same ground as the *black Partridge (Perdix picta)*. Gregarious and abundant. In closing his notices of the *Quails*, Colonel SYKES mentioned that grass seeds constitute their principal food.

Genus *Perdix*, Biss. *Partridge.*

158. *Perdix picta*, Jard. & Selby, Pl. 150.

This is called the *black partridge* in Dukhun, by Europeans. It affects uncultivated tracts in the country, covered with tufts of rank grass and low bushes, where it is abundant. Colonel SYKES has never met with it in gardens. The call of the male is a kind of broken crow. Sexes exactly alike. *Irides*, reddish dark-brown. Length, inclusive of tail, 10 inches: tail 2·5 inches. Does not roost on trees.

Genus *Francolinus*, Steph. *Francolin.*

169. *Francolinus Ponticerianus*, Steph. 11. 321. *Perdix Ponticeriana*, Lath., Ind. Orn. 2. 649. 18. Temm., Pl. Col. 213. *Ferruginous and Grey Francolin. Teelur* of the Mahrattas.

Called a partridge in the Dukhun, where it is one of the most common birds, frequenting gardens and cultivated lands. *Irides* intense red brown. Length, inclusive of tail, 14 inches; tail 3.6 inches. Not met with in the Ghauts, unless in well cultivated valleys, and not at all on the mountains. Roosts on trees; and Colonel SYKES has on more than one occasion shot them on trees during the daytime; but this is a rare occurrence.

[*To be continued.*]

Meteorological Register, kept at the Assay Office, Calcutta, for the Month of November, 1834.

Day of the Month.	Barometer reduced to 32° Fahr.				Thermometer in the Air.					Depression of Moist-bulb Thermometer.				Hair Hygrometer.		Rain.	Wind.			Weather.		
	At 4½ A.M.	At 10 A.M.	At 4 P. M.	At 10 P. M.	Minimum at 4½ A. M.	At 10 A.M.	Max. by Reg. Ther.	At 4 P. M.	At 10 P. M.	At 5¼ A. M.	At 10 A. M.	At 4 P. M.	At 10 P. M.	At 10 A. M.	At 4 P. M.	Inches.	Morning.	Noon.	Evening.	Morning.	Noon.	Evening.
1	,866	,934	,850	,926	77,2	80,0	104,	82,0	77,4	3,4	7,8	11,3	4,4	88	78		o.	N.	o.	rain.	clear	bright.
2	,916	,000	,908	,982	75,6	79,5	104,	82,4	77,2	2,8	9,1	12,8	4,2	85	75		o.	W.	o.	clear.	do	do
3	,966	,997	,936	,988	74,7	80,5	102,	81,9	77,2	1,6	9,3	9,7	2,6	84	83		o.	n.	o.	do	do	do
4	,945	,996	,890	,953	74,5	79,8	103,	81,7	78,5	1,5	7,0	9,9	3,4	89	84		o.	n.	o.	do	do	cloudy.
5	,912	,964	,886	,935	73,5	79,4	88,7	81,1	75,6	1,2	6,1	7,4	2,7	93	83		o.	ne.	o.	do	showers.	rain.
6	,886	,970	,870	,906	73,2	77,5	76,8	77,4	72,0	0,5	4,6	4,5	1,3	98	98		n.	ne.	n.	rain.	hazy.	cloudy.
7	,873	,950	,880	,930	71,	76,4	98,	79,4	75,	0,4	4,9	6,4	2,0	96	93		N.	nw.	n.	clear.	fine.	clear.
8	,910	,962	,914	,966	72,2	76,1	99,7	80,7	74,1	1,7	5,6	9,0	1,4	92	84		n.	nw.	n.	do	do	do
9	,935	,014	,935	,994	70,3	77,1	102,	80,3	74,6	1,2	9,1	11,6	4,0	83	78		n.	w.	o.	do	do	do
10	,949	,011	,929	,976	71,5	76,9	101,	80,1	74,3	2,5	8,3	10,4	3,2	85	80		o.	e. n.	o.	do	do	bright.
11	,924	,966	,916	,973	70,	86,4	101,	78,9	74,	1,0	8,7	11,9	3,6	85	78		o.	ne.o.	o.	do	do	hazy.
12	,936	,984	,934	,980	70,4	75,9	101,1	80.2	73,2	2,1	7,9	10,8	3,4	88	80		n.	nw.	o.	do	do	clear.
13	,963	,050	,940	,996	70,	75,9	103,	79,5	72,0	2,8	8,8	12,4	2,0	85	75		n.	.	o.	do	do	bright.
14	,958	,030	,976	,989	68,6	76,3	102,	78,7	72,2	2,9	9,8	10,3	1,6	82	83		n.	n.	o.	do	do	fog.
15	,974	,050	,981	,021	69,4	76,7	101,	78,7	73,2	1,7	8,5	10,2	2,0	86	82		w.	n.	w.	do	do	cumuli.
16	,008	,086	,994	,030	70,	76,5	102,	78,6	75,0	1,9	6,7	10,3	2,5	91	82		n.	nw.	n.	do	cumuli.	cum.citrus
17	,009	,078	,932	,097	70,8	76,0	93,	78,4	71,3	1,7	5,9	9,1	1,1	92	85		o.	o.	o.	hazy.	do	cumuli.
18	,964	,070	,973	,032	70,1	76,0	99,8	79,3	73,2	2,1	5,9	9,6	1,8	92	84		n.	nw.	o.	clear.	do	do
19	,012	,082	,974	,068	70,8	76,4	98,	79,2	75,0	2,0	6,9	8,9	2,7	91	85		n.	nw.	n.	cum. cir.	clear.	do
20	,015	,040	,980	,015	69,2	76,8	101,	78,5	72,7	2,0	8,1	9,9	2,7	86	82		n.	nw.	n.	clear.	do	cum. cir.
21	,024	,096	,958	,069	69,7	75,5	92,5	78,6	74,2	2,3	6,7	8,9	1,6	91	85		n.	nw.	n.	cumuli.	do	clear.
22	,024	,086	,950	,001	69,	75,9	100,	78,9	73,2	2,4	6,0	10,2	2,2	93	82		n.	n.	n.	clear.	do	do
23	,946	,954	,892	,930	70,	76,5	100,	77,5	73,2	2,3	6,0	10,8	2,0	83	79		n.	n.	n.	do	do	do
24	,902	,998	,900	,921	70,	74,8	94,	78,1	71,5	2,5	7,3	10,4	3,7	90	81		n.	n.	nw.	do	do	cloudy.
25	,936	,022	,920	,001	70,6	75,3	97,8	78,7	70,1	2,8	7,5	11,1	2,0	83	78		nw.	n.	nw.	cloudy.	do	clear.
26	,982	,078	,998	,067	68,7	74,8	94,	77,6	72,3	1,7	8,5	10,0	4,3	86	84		n.	ne.	n.	cumuli.	do	do
27	,972	,029	,914	,961	67,8	74,3	98,4	78,4	74,	2,8	6,4	11,1	7,0	93	80		o.	ne.	n.	do	do	cumuli.
28	,932	,014	,900	,959	68,2	74,1	101,	78,4	71,2	3,1	7,7	10,9	4,4	89	79		o	ne.	n.	do	dull,	do
29	,954	,038	,938	,011	69,8	74,9	95,	77,5	71,	4,8	7,0	11,1	6,0	89	80		ne.	ne.	n.	clear,	do	clear.
30	,994	,070	,965	,046	65,7	74,5	92,	77,9	70,4	4,3	6,5	11,0	6,4	88	78		n.	ne.	n.	do	clear.	do
Mean,	,953	,021	,931	,991	71,-	79,2	98,1	79,4	74,1	2,2	7,5	10,1	3,1	88,7	82,1		Light N. airs.			Fine and seasonable.		

The instruments and localities as usual. The Barometer has been compared with Captain HENNING's Marine Barometer from England (which had been adjusted with the Royal Society's Standard instrument,) and found just 0 010 inch lower than the Roy. Soc. Bar. The maximum thermometer is found to be exposed to the sun's rays at this season. On the 5th and 6th there was a severe storm in the Bay, by which the Sophia was dismasted.